

FISHERY MARKET NEWS

FEBRUARY 1945

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FISHERY MARKET NEWS

A REVIEW OF CONDITIONS AND TRENDS OF THE FISHERY INDUSTRIES

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FOOD CONSUMPTION OF DEEP-SEA FISHERMEN

By Ruth M. Lusby and Lucille S. Binson*

Introduction--At the request of the Office of Price Administration, a study was made of the food consumption of seamen on vessels operating in the Inland Waterways System, the Intra-Coastal Waterways, and in ocean transport.

At about the same time as the problem of the food intake of seamen arose, it seemed desirable to obtain information about the food supplied to deep-sea fishermen. The Fish and Wildlife Service of the U. S. Department of the Interior cooperated in obtaining written reports of food supplied to fishing craft operating off the North Pacific, California, Gulf of Mexico, and Florida Coasts. As no complete figures were available for the North Atlantic Region, we made a field study in Boston and in Gloucester, Mass., to secure data for this region.

The need for this study was brought about by a change in the regulations of OPA under Ration Order 5 which made it no longer possible for an institutional user to count beverage service as meals served in determining his allotment of ration points. Since many local ration boards had been granting vessels ration points on the basis of 6 to 12 meal services per day, the new regulations were viewed with doubt by representatives of the Inland Waterways and Office of Defense Transportation, who questioned whether allowances granted on this basis would equal the rations they had been receiving.

The full report was written in two parts. Part two, which concerns the food intake of deep-sea fishermen, follows:

Historical Background--The representatives of the agencies concerned with the food requirements of seamen, in several conferences held between February 18 and April 27, 1944, emphasized that it was their belief that certain psychological needs of these workers, and other allied conditions, should be considered as well as their physiological needs.

At a meeting of the Food and Nutrition Board of the National Research Council, previous to this study, a classification of industries according to caloric requirement was approved. It was recommended by the Board that this listing of industries in Categories III and IV be considered provisional, and subject to such revision as further information might justify. In their report, the Board placed sailors and deckhands in Category III. This would place these workers at the 3,700 caloric level.

At about the time this study was started, commercial fishermen, seamen, and deckhands employed on inland waterway carriers were granted ration points on the basis of four meals per day, with an allowance of 0.7 processed points per man per meal, and 1.0 meat and fat points per man per meal, when no baking is done. (Gen. R.O. 5 - Amdt. 52, March 15, 1944,

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and R.O. 5, Supplement 3, February 19, 1944.) This allowance provided 4.0 meat and fat points and 2.8 processed food points per man per day.

Methods Used and Findings--Data on the food supplies of the fishing boats in the Northeast and Pacific regions were organized according to region, the fleet, and in some cases, the type of fishing craft. Caloric values were calculated for the food supplies used on all of the boats, and the estimates of nutritive values were made for the most representative ones.

Calculations of the ration points needed to obtain the rationed food supplied to each craft were made for the boats operating in the Northeast Region. Ration points were calculated according to the point values in use in November 1943, the month for which the data were obtained.

Nutritive value figures were based on the National Research Council's "Tables of Food Composition," dated March 1, 1943.

The average daily caloric value of food supplied to the fishermen on all of the boats studied was about 5,400 calories. The caloric values of the dietaries calculated ranged from 6,930 calories per man per day to 4,450 calories per man per day. These figures, however, represented extreme cases. Boat C (4,450 calories) showed a low level because the men of the Italian fleet eat a great deal of freshly-caught fish in place of meat. As no record is kept of the fish eaten, it could not be included in the calculations, and, therefore, these dietaries as recorded represent a lower protein content and caloric value than the men actually received.

The ration points used for the supplies of rationed foods used on these boats ranged from 5.5 to 15.8 meat and fat points per man per day, and from 1.9 to 4.7 processed food points per man per day. The ration points allowed to civilians at this same time (November 1943) were 2.3 meat and fat points per person per day, and 1.6 processed food points per man per day.

The dietaries, as given in Table 5, were, for the most part, nutritionally adequate. Ascorbic acid was the nutrient which was in inadequate supply in most of the dietaries. The diets supplied to the fishermen on Boats A and E in the Northeast Region, and on Boats I and K of the Pacific Region were deficient in ascorbic acid. In each case this insufficiency was caused by an inadequate supply of citrus fruits and of tomatoes. The diet of the men in Boat K also was low in calcium, riboflavin, and vitamin A, because of the small amounts of dairy products supplied. For the same reason, the amount of riboflavin supplied by the diet of the men on Boat J was low.

Table 5 - Nutritive Value of Diets Available to Deep-sea Fishermen
on Selected Vessels in the Northeast Region¹

Fleet	Vessel	Food Per Man Per Day		Protein	Fat	Carbo-hydrate	Calcium	Iron	V I T A M I N S					Ascorbic acid
		Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	A	Thiamine	Ribo-flavin	Niacin	Mg.	
Yankee	A	3.7	4755	157	203	568	819	29	3589	3.9	3.3	36	62	
English-Scotch	B	5.4	4936	180	268	446	863	31	5840	3.7	3.0	38	92	
Italian	C	5.1	4448	132	191	535	1019	22	3592	2.8	2.3	24	85	
Icelandic	D	4.9	5099	158	262	523	698	31	7264	3.9	2.9	37	86	
Portuguese	E	4.7	4748	162	229	509	927	29	5080	2.0	3.0	37	293	

1/ Table 5 shows the nutritive value per man per day of food supplied to men on deep-sea fishing vessels sailing out of Gloucester and Boston, Mass. One vessel was selected from each fleet, since the crews of the fleets represented several nationalities. Cooking losses have been applied.

2/ The small amount of ascorbic acid in the food supplied by Vessel A of the Yankee Fleet can be explained by the fact that this vessel did not purchase any citrus fruits or tomatoes, and used very few leafy, green and yellow vegetables.

3/ The amount of ascorbic acid supplied on Vessel E, of the Portuguese Fleet, is also low because no citrus fruit or tomatoes were provided. The 29 mg. of ascorbic acid per man per day was obtained largely from potatoes (0.7 lb. per man per day) and from vegetables and fruits other than citrus and tomatoes.

Table 5A - Nutritive Value of Diets Available to Deep-sea Fishermen in Percentage

Fleet	Vessel	CALORIES FROM		
		Protein	Fat	Carbohydrate
		Percent	Percent	Percent
Yankee	A	13	39	48
English-Scotch	B	15	49	36
Italian	C	12	39	49
Icelandic	D	12	46	41
Portuguese	E	14	43	43
Recommended percentage		12-15	30-35	50-55

Food Habits of Deep Sea Fishermen in the Northeast and Western Regions--The outstanding difference in the diets of the various nationality groups of fishermen which were studied occurred in the quantities of the various foods which were used, rather than in the kinds of food. In Tables 8, 9, 10, 11, and 12 the amounts of food used are shown by groups for

Table 8 - Nutritive Value of Food Purchases for 18 Men for 7 Days
Yankee Fleet out of Gloucester - Vessel A

Item	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Cal- cium	Iron	VITAMINS				
								A	Thiamine	Ribo- flavin	Niacin	Ascorbic acid
	Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
Dairy products	0.384	288.3	15.3	15.2	15.8	531	0.80	986	0.079	0.586	0.35	0
Dry beans, peas, & nuts	0.047	76.0	5.0	0.3	13.4	24	1.76	0	0.192	0.066	0.49	0
*Potatoes and swt. potatoes	-	-	-	-	-	-	-	-	-	-	-	-
Citrus fruits & tomatoes	0.014	6.9	0.1	0	1.5	3	0.02	37	0.005	0.003	0	0
Leafy, green & yellow vegetables	0.077	13.0	0.8	0	2.4	10	0.33	279	0.023	0.026	0.24	1.9
Other vegetables & fruits	0.264	131.3	1.1	0.1	31.2	20	1.09	702	0.042	0.033	0.56	4.2
Grain products	0.902	1487.9	42.6	10.4	305.7	119	9.35	26	1.309	0.736	10.42	0
Meat, fish, and poultry	1.119	1407.0	70.1	119.5	1.6	42	10.18	0	2.723	0.968	26.52	1.2
Eggs	0.238	151.2	12.4	11.0	0.7	52	2.59	962	0.198	0.345	0.07	0
Fats and oils	0.100	378.0	0.1	42.0	0.1	3	0.04	596	0	0.002	0.04	0
Sugars and jams	0.413	744.9	0	0	186.2	0	0	0	0	0	0	0
Miscellaneous	0.109	70.0	6.3	0.9	9.2	15	3.13	0	0.396	0.777	4.75	0
Totals	3.669	4755.0	153.8	202.4	567.8	819	29.29	3589	4.967	3.542	43.44	7.3
Cooking loss ..	-	-	-	-	-	-	-	-	1.097	0.206	7.87	1.2
Total after cooking	-	-	-	-	-	-	-	-	3.870	3.336	38.57	6.1

*No record included of potato purchases.

five fishing craft in the Northeast Region. The English-Scotch fleet used larger amounts of meat; the Italian fleet purchased very little meat, but used a considerable quantity of fish from their catch. The Italian fishermen ate large amounts of fresh tomatoes, tomato products, and oranges. The Icelandic fleet used less tomatoes and a smaller quantity of oranges than the Italians did, but they used larger amounts of leafy, green and yellow vegetables. The Slavonian fishermen used no citrus fruits or tomatoes. The Scandinavian dietary contained no citrus fruits, and only a small quantity of dairy products.

These differences in food usage are related directly to the deficiencies in nutrients apparent when the nutritive values of the dietaries of the various nationalities are analyzed.

Table 5 gives a summary of the food supplied to deep-sea fishermen of five fleets sailing out of Boston and Gloucester, Mass., in November 1943. The total nutritive value of the food also is shown. This summary represents a caloric range of from 4,400 to 5,000 calories per man per day. The vitamin A value of the diets is low in the cases of Boats A and C, the thiamine value is low for Boat E of the Portuguese fleet, and the riboflavin is low for

Boats B, C, D, and E. Ascorbic acid is very low for Boats A and E, in both instances, because of a very small usage of citrus fruits, tomatoes, and leafy vegetables.

The percentage of calories from protein varies from 12 to 15 percent. The percentage of calories from fat is higher than the 30 to 35 percent advocated for this caloric level, but in keeping with the 40 percent amount found in dietaries of other very active workers. The carbohydrate varies from 36 to 49 percent, in every case below the 50 percent or more recommended for this caloric level.

Table 9 - Nutritive Value of Food Purchases for 11 Men for 21 Days
English-Scotch Fleet - Vessel B

Item	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Cal- cium	Iron	V I T A M I N S				
								A	Thiamine	Ribo- flavin	Niacin	Ascorbic acid
Food Group	Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
Dairy products	0.568	323.6	15.9	20.8	18.5	545.0	0.87	1173.0	0.108	0.699	0.34	2.1
Potatoes and swt. potatoes	0.892	291.6	7.1	0.4	65.1	27.0	2.50	134.0	0.303	0.169	4.01	33.9
Dry beans, peas, and nuts	0.026	41.5	2.7	0.2	7.3	13.0	0.96	0	0.105	0.036	0.28	0
Citrus fruit and tomatoes	0.110	15.6	0.2	0	3.4	7.0	0.14	137.0	0.029	0.009	0.19	11.7
Leafy, green and yellow vegetables	0.182	24.8	1.1	0.1	4.8	25.0	0.56	1949.0	0.052	0.046	0.48	14.2
Other fruits and vegetables	0.741	175.9	3.5	1.1	38.6	79.0	1.69	382.0	0.130	0.145	0.93	51.4
Eggs	0.130	82.5	6.8	6.0	0.4	28.0	1.42	525.0	0.108	0.188	0.04	0
Meat, fish, and poultry	1.726	2018.7	110.5	202.9	1.4	70.0	15.43	6.0	3.180	1.272	33.07	2.2
Grain products	0.567	1077.2	30.5	10.5	213.9	60.0	6.95	49.0	1.037	0.639	8.36	0
Fats and oils	0.147	508.5	0.4	56.2	0.4	8.0	0.11	1484.0	0.001	0.005	0.06	0
Sugars and sirups	0.199	348.0	0	0	86.8	2.0	0.03	0	0	0	0	0
Miscellaneous	0.024	28.4	1.2	0	5.8	1.0	0.24	0	0.045	0.089	0.54	0
Totals	5.413	4936.0	179.9	298.3	446.5	863.9	30.89	3839.8	5.098	3.297	48.30	115.5
Cooking loss .	-	-	-	-	-	-	-	-	1.357	0.309	9.98	23.3
Total after cooking	-	-	-	-	-	-	-	-	3.741	2.988	38.32	92.2

Table 10 - Nutritive Value of Food Purchases for 8 Men for 21 Days
Italian Fleet - Vessel C

Item	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Cal- cium	Iron	V I T A M I N S				
								A	Thiamine	Ribo- flavin	Niacin	Ascorbic acid
Food Group	Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
Dairy products	0.7598	379.0	20.0	23.5	22.1	686.3	1.05	1225.3	0.144	0.886	0.41	4.1
Dry beans, peas, and nuts	0.0417	81.3	4.7	2.7	9.4	13.9	0.91	0	0.182	0.046	1.24	0
Potatoes and swt. potatoes	0.2679	87.6	2.1	0.1	19.6	8.0	0.75	40.2	0.091	0.051	1.21	10.2
Citrus fruit and tomatoes	0.4786	67.2	1.4	0.4	14.5	39.7	0.76	693.8	0.147	0.057	0.87	56.8
Leafy, green and yellow veg.	0.0446	11.2	0.7	0	2.1	2.9	0.24	163.7	0.026	0.018	0.26	1.6
Other fruits & vegetables	0.4946	173.1	1.3	2.1	35.7	36.7	0.97	197.3	0.048	0.088	0.37	6.6
Eggs	0.0982	62.4	5.1	4.5	0.3	21.4	1.07	396.7	0.082	0.142	0.03	0
Meat, fish, and poultry	0.5368	638.2	39.2	52.2	0.1	23.9	5.66	0	1.626	0.607	15.39	0.3
Grain products	1.4300	2333.7	57.2	4.7	420.0	175.7	10.26	161.5	1.225	0.569	9.90	0
Fats and oils	0.1369	522.6	0.1	58.0	0.1	3.5	0.04	714.0	0	0.002	0.02	0
Sugars and sirups	0.0333	44.7	0	0	11.2	7.0	0.62	0	0	0	0	0
Miscellaneous	0.2857	47.4	0	0	0	0	0	0	0	0	0	0
Totals	4.6081	4448.4	131.8	191.2	535.1	1019.0	22.33	3592.5	3.571	2.466	23.70	79.6
Cooking loss .	-	-	-	-	-	-	-	-	0.735	0.140	5.32	7.4
Total after cooking	-	-	-	-	-	-	-	-	2.826	2.326	24.38	72.2

Table 11 - Nutritive Value of Food Purchases for 27 Men for 21 Days
Icelandic Fleet - Vessel D

Atlantic Fleet - vessel D												
Item	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Cal- cium	Iron	V I T A M I N S				
								A	Thiamine	Ribo- flavin	Niacin	Ascorbic acid
Food Group	Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
Dairy products	0.3157	209.0	10.8	12.3	13.9	367.5	0.59	572.4	0.066	0.473	0.28	0
Potatoes and swt. potatoes	0.8818	288.3	7.1	0.4	64.4	26.5	2.47	132.3	0.300	0.168	4.00	33.5
Dry beans, peas, and nuts	0.0511	81.7	5.4	0.3	14.3	25.6	1.89	0	0.206	0.071	0.54	0
Citrus fruit and tomatoes	0.2151	34.8	0.6	0.1	7.9	18.9	0.22	44.4	0.061	0.019	0.32	26.5
Leafy, green and yellow veg.	0.2323	31.1	1.4	0.3	6.2	32.6	0.66	3753.0	0.063	0.055	0.65	18.5
Other fruits & vegetables	0.4360	114.0	2.3	0.6	24.9	49.2	1.05	221.6	0.081	0.088	0.61	30.6
Eggs	0.1720	109.2	8.9	7.9	0.5	37.5	1.87	694.9	0.143	0.249	0.05	0
Meat, fish, and poultry	1.2152	1460.3	79.6	124.8	1.1	50.8	11.78	18.8	2.725	1.033	26.40	0
Grain products	0.8810	1416.5	40.7	12.6	284.5	78.8	9.93	57.2	1.448	0.873	11.69	0
Fats and oils	0.2522	929.1	0.4	102.9	0.3	9.7	0.12	1668.9	0.002	0.005	0.11	0
Sugars and sirups	0.2275	410.6	0	0	102.6	0	0	0	0	0	0	0
Miscellaneous	0.0159	14.6	0.8	0	2.7	1.2	0.24	0	0.044	0.086	0.53	0
Totals	4.8958	5099.2	158.0	262.2	523.3	698.3	30.82	7263.5	5.139	3.120	45.18	109.1
Cooking loss .	-	-	-	-	-	-	-	-	1.237	0.260	7.71	23.5
Total after cooking	-	-	-	-	-	-	-	-	3.902	2.860	37.47	85.6

Table 12 - Nutritive Value of Food Purchases for 12 Men for 14 Days
Portuguese Fleet - Vessel E

Item	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Cal- cium	Iron	V I T A M I N S					Ascorbic acid
								A	Thiamine	Ribo- flavin	Niacin		
Food Group	Lbs.	Calories	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.	
Dairy products	0.6554	382.3	20.0	23.2	25.6	583.7	1.07	1239.0	0.120	0.843	0.51	1.8	
Dry beans, peas and nuts	0.0298	47.3	3.0	0.2	8.4	20.0	1.39	0	0.070	0.042	0.38	0	
Potatoes and swt. potatoes	0.7143	233.6	5.7	0.4	52.1	21.4	2.00	107.1	0.243	0.136	3.21	27.1	
Citrus fruit & tomatoes	0.0104	5.1	0.1	0	1.2	2.0	0.01	27.9	0.004	0.002	0	0	
Leafy, green & yellow veg.	0.1201	22.8	1.2	0.1	4.3	12.1	0.51	457.8	0.041	0.038	0.45	3.0	
Other veg. & fruits	0.3055	126.1	1.0	0.1	29.9	24.1	1.22	522.5	0.035	0.069	0.39	6.5	
Eggs	0.2768	175.8	14.4	12.7	0.8	60.3	3.02	1118.3	0.230	0.401	0.08	0	
Meat, fish, & poultry	1.3751	1379.2	88.7	113.6	0.6	53.1	12.84	0	1.927	0.938	33.57	1.7	
Grain products	0.5284	852.6	25.4	2.3	182.0	36.6	6.15	0	0.895	0.551	7.37	0	
Fats & oils	0.1892	691.1	0.3	76.6	0.2	7.8	0.10	1607.7	0.001	0.004	0.08	0	
Sugars	0.4495	791.3	0	0	197.6	3.6	0.15	0	0	0	0	0	
Miscellaneous	0.0358	40.7	1.9	0	8.3	2.0	0.40	0	0.074	0.146	0.89	0	
Totals ...	4.6903	4747.9	161.7	229.2	509.0	926.7	28.86	5080.3	3.640	3.170	46.93	40.1	
Cooking loss	-	-	-	-	-	-	-	-	0.869	0.228	9.85	11.3	
Total after cooking ...	-	-	-	-	-	-	-	-	2.771	2.942	37.08	28.8	

Table 6 shows the quantities of rationed foods used and the ration points required for fishing craft of six fleets sailing out of Gloucester and Boston, Mass.

Table 7 shows the amount of rationed foods used per man per day and its nutritive value for vessels fishing off the Alaska and California Coasts. The caloric value of the food supplied to these western vessels ranged from 4,660 to 6,529 calories per man per day. As was the case with the figures obtained from the northeastern fishing craft, no information

Table 6 - Quantities of Rationed Foods Used by Deep-sea Fishermen in the Northeast Region

Fleet	Vessel	Total Calories	Meat, Poultry & Fish Per Man Per Day		Fats and Oils Per Man Per Day		Canned Fruit and Vegetables Per Man Per Day	Ration Points Per Man Per Day	
			Total	Rationed	Total	Rationed		Red	Green
Yankee (Dragger)	A	4760	Lbs. 1.12	Lbs. 1.01	Lbs. 0.10	Lbs. 0.10	Lbs. 0.21	9.0	3.6
English-Scotch (Dragger)	B	4940	1.73	1.51	0.15	0.15	0.32	12.4	3.5
Italian (Dragger)	C	4450	0.54	0.51	0.14	0.05	0.37	5.5	4.7
Icelandic (Vessel)	D	5100	1.22	1.22	0.25	0.25	0.15	11.0	1.9
Portuguese (Dragger)	E	4750	1.38	1.23	0.19	0.17	0.32	11.9	4.5
English-Scotch (Trawler)	F	5900	2.17	2.02	0.17	0.17	0.28	15.7	3.7

about the percentage of food waste was available. Therefore, the food supplied to the vessels was counted as food consumed. It is probable that the waste would amount from 10 to 20 percent of the total food supplied.

Table 7 - Nutritive Value of Diets Available to Deep-sea Fishermen in the Western Region

Fleet	Type of Vessel	Food Per Man Per Day		Protein	Fat	Carbo- hydrate	Calcium	Iron	V I T A M I N S				
		Lbs.	Calories						Gm.	Gm.	Gm.	Mg.	Mg.
Alaska	Purse Seiner	5.2	4660	121.0	238.0	540.0	1078	29.0	13926	2.7	2.44	25.78	111
California	Snapper Snack	4.5	4790	140.0	202.0	599.0	633	29.0	3073	4.34	2.70	37.24	72
Alaska ^{1/}	Purse Seiner	5.88	5146	179.0	321.1	370.8	845	32.42	17647	6.44	3.10	58.04	170
Cali- fornia ^{2/}	Tuna Purse Seiner	6.97	6529	188.8	327.9	705.9	1220	34.07	14432	5.06	474	45.77	77

^{1/} Scandinavian crew.

^{2/} Slavonian crew.

CONCLUSIONS

1. Food purchase records of several vessels of the Inland Waterways System and of representative deep-sea fishing craft, operating off the Pacific Coast and in the waters of the Northeast Region, indicate that seamen on carriers engaged in coastwise and inland waterway transport, and deep-sea fishermen utilize food of similar caloric value. The caloric level of these workers appears to be between 4,500 and 5,500 calories per man per day.

2. This study places seamen and crews of the Inland Waterways System and deep-sea fishermen in Category II of active workers with an energy requirement of about 5,000 calories per day.

3. The deep-sea fishermen, in particular, tend to be employed in specific groups representing national inheritance, such as Italian, Scandinavian, Slavonian, Icelandic, and Yankee. The national food patterns are represented rather clearly by an analysis of the supplies furnished to the different boats. Some of the "fleets", like the Italian, for example, used a large amount of fish from the catch, instead of meat; while others, like the Scotch-English, used almost no fish and purchased larger amounts of beef and other meats.

SURVEY OF AVAILABLE AND POTENTIAL FISH WASTE FOR REDUCTION IN WASHINGTON AND OREGON

By Charles Butler*

A study has been made of several areas in Washington and Oregon to determine which could possibly increase their recoveries of fishery byproducts. The fish landings in the Astoria, Grays Harbor, and Puget Sound areas are each sufficiently large to warrant detailed consideration. Data and information gathered in this preliminary survey will be used to determine the course of future research on fishery byproducts in the Fish and Wildlife Service Laboratory at Seattle.

In order to make an estimate of the potential fish waste for 1943, several sources of information have been consulted. (The year 1943 may not be representative of future fishing activities, but it does serve as a basis for definite data from which estimates may be made of the potential fish waste available in the Pacific Northwest.) The departments of fisheries of Washington and Oregon each annually report data on the catches of fish and the packs of canned products in their respective states. The Market News Section of the Service's Division of Commercial Fisheries publishes daily reports and monthly and annual summaries of the fishing activities in the localities studied. The calculations of the waste from filleted fish have been based on current commercial dress-out losses, while the data on cannery waste and market scrap were based on adjusted averages which are more fully explained in the appendix.

ASTORIA AREA

Astoria, Oregon, has long been an important salmon canning center. Since about 1938, albacore tuna has become increasingly important there as well. Supplies of fish for the

Table 1 - Landings of the Otter Trawl Fleet at Astoria, Oregon, and the Waste Potentially Available Therefrom - 1943

Month	Flounders		Rockfish		Dover		English	
	Landings	Waste	Landings	Waste	Landings	Waste	Landings	Waste
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
January	4,301	3,225	55,208	40,301	-	-	12,885	10,308
February	29,120	21,840	116,164	84,799	-	-	22,630	18,103
March	22,649	16,986	307,397	224,401	-	-	88,881	71,104
April	25,909	19,431	1,254,820	916,018	30,659	23,000	106,545	85,235
May	41,612	31,208	739,408	539,767	1,205,077	915,858	53,039	42,431
June	16,839	12,629	228,598	166,876	2,637,697	2,004,648	44,338	35,470
July	12,711	9,532	395,595	288,784	986,992	750,113	69,736	55,788
August	31,944	23,957	455,251	332,332	609,870	463,500	76,813	61,450
September	96,104	72,077	223,190	162,928	195,727	148,751	106,963	85,570
October	87,052	65,289	240,371	175,470	113,841	86,519	108,184	86,547
November	100,669	75,501	1,908,216	1,392,997	8,636	6,563	48,880	39,109
December	303,335	227,501	162,026	118,278	-	-	69,880	55,904
Total	772,245	579,176	6,086,244	4,442,951	5,788,499	4,399,252	808,774	647,013

Month	S O L E (Cont'd.)				Turbot		Total	
	Petrale		Other		Landings	Waste	Landings	Waste
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
January	17,970	12,579	198	158	70	49	90,632	66,620
February	99,839	69,887	8,403	6,722	17,284	12,098	293,440	213,449
March	123,347	86,343	23,534	18,827	61,603	43,122	627,411	460,783
April	186,108	130,275	93,635	74,908	127,257	89,079	1,824,933	1,338,246
May	565,551	395,886	448,515	358,812	559,749	389,024	3,608,951	2,672,986
June	809,276	566,492	903,863	722,289	647,010	452,907	5,287,621	3,961,311
July	537,229	376,059	244,865	195,891	517,134	361,993	2,764,262	2,038,160
August	739,381	517,566	228,199	182,558	412,221	288,554	2,553,679	1,869,917
September	223,129	156,189	21,965	17,571	142,906	100,034	1,009,984	743,120
October	48,564	33,995	14,682	11,744	55,686	38,979	668,380	498,543
November	45,865	31,935	18,121	14,436	10,991	7,693	2,141,378	1,568,288
December	28,569	19,938	10,234	8,187	-	-	574,044	429,868
Total	3,424,828	2,397,204	2,016,214	1,612,163	2,547,911	1,783,532	21,444,715	15,861,291

fresh and frozen markets were formerly obtained from the salmon trollers and from a small halibut fleet. The advent of mechanized fillet lines in the area has stimulated the activ-

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ities in the otter-trawl fishery so much that fish from this source now make a considerable contribution to the total supply.

Available Waste Materials--In the Astoria area, the otter-trawl fishery is now the principal potential source of raw material for fishery byproducts. The otter-trawl catch for this area has doubled for each succeeding year since this type of gear became important in 1941. The landings for 1943, and the corresponding calculated amounts of filleting wastes, are shown in Table 1.

The salmon and tuna fisheries are the next most important sources of waste material. Data on the total landings of these two and of a few other species for all the ports of Oregon are given in Table 2. It can be assumed that the largest share of these landings were made in the vicinity of Astoria.

Table 2 - Landings of Miscellaneous Fish at Oregon Ports - 1943

Month	Albacore ¹ Pounds	Albacore ² Pounds	Halibut Pounds	Lingcod Pounds	Sablefish Pounds
January	-	-	-	30,587	-
February	-	-	-	46,390	-
March	-	-	-	103,139	44
April	-	-	63,888	68,847	1,041
May	-	-	326,818	138,421	53,362
June	-	-	447,746	119,163	150,940
July	1,333,241	419,317	5,721	137,099	570,537
August	2,922,206	1,160,977	76	75,996	304,779
September	2,646,887	689,252	64	78,067	24,069
October	1,067,015	147,007	39	43,280	6,436
November	-	-	98	46,185	2,481
December	-	-	-	47,705	2,372
Total	7,969,349	2,416,553	644,450	934,679	1,116,061

Month	S A L M O N			Steelhead Pounds	Grayfish Pounds	Grayfish Livers Pounds
	Chinook Pounds	Silver Pounds	Other Pounds			
January	944	1,113	1,571	68,811	6,822	6,929
February	45,159	3,383	2,069	79,464	5,520	3,337
March	80,983	4,627	1,600	6,253	41,209	4,588
April	143,924	11	-	835	26,106	5,993
May	841,437	704	-	23,935	2,669	12,629
June	292,115	48,658	50,372	21,579	23,764	9,105
July	519,035	234,398	61,179	230,345	25,120	22,669
August	3,195,500	236,244	2,381	256,573	46,396	13,179
September	3,413,722	531,865	530	501,900	308,229	22,540
October	454,888	659,910	120,622	47,671	452,396	102,316
November	99,144	121,917	797,618	21,758	385,422	52,447
December	9,868	19,332	20,703	29,905	275,716	28,005
Total	9,096,719	1,862,162	1,058,645	1,289,029	1,599,369	283,737

1/ Landings in Columbia River area.

2/ Landings at Oregon Coast ports.

A summary of the quantities of fish waste, and the byproducts recoverable therefrom, for this area is given in Table 3.

Table 3 - Potential Fish Waste and Byproducts Available therefrom at Astoria - 1943

Species	Waste	Oil Recovery	Meal Recovery	Value of Byproducts
	Lbs.	Gallons	Tons	Dollars
Albacore	3,450,000	17,250	286	27,510
Flounders	772,200	3,105	64	6,215
Halibut	76,000	570	6	750
Lingcod	121,500	480	10	968
Rockfish	6,086,200	24,340	507	49,080
Sablefish	173,000	1,350	15	1,830
Salmon	6,275,000	58,975	625	76,010
Sole:				
Dover	5,788,500	23,120	481	46,580
English	808,700	3,230	67	6,494
Petrale	3,424,800	13,730	285	27,618
Other	2,016,200	8,065	168	16,263
Turbot	2,547,900	10,190	212	20,530
Grayfish	1,600,000	8,000	134	16,190
Totals	33,140,000	172,495	2,860	296,038

Present Plant Usage and Capacity--Most of the reduction plants in the Astoria area were installed for processing pilchards. The equipment is of the "wet reduction" type, having a relatively large capacity, and is designed for continuous operation. The pilchard fishery did not develop according to the original expectations and, therefore, other sources of raw material have been sought. One of the largest new raw materials sources has been fillet waste. However, the capacity of each pilchard plant is so large that only a part-time operation would result if one of the present plants were to obtain all the potential waste.

In this area, there is an excellent example of what can be done with fish waste; one well-established company with equipment of moderate capacity has so diversified its output of fishery byproducts that there is practically a year-round production. Among the fish materials which have been processed into oil and meal are salmon and tuna cannery offal, fillet waste, and shark carcasses. Vitamin oils and many specialty products for hatchery and fur farm feeds are also recovered.

The salmon canneries of the Columbia River for years have utilized the portions of the offal other than the viscera for the production of edible salmon oil, which is added to the canned salmon pack. At present, much of the gurry from this process, consisting of the protein portion of the waste, is being recovered for processing into fish meal.

Waste from the tuna canneries has also been utilized for oil and meal. The present trend toward a more careful segregation of the better quality dark flakes for canning purposes will somewhat lower the protein content, and hence the value, of the meal from this source. Tuna pre-cooking processes yield a small amount of body oil, supplementing the oil recovered from the reduction of the waste.

Tuna livers are separated from the viscera to be sold as a source of oils high in natural vitamin D. The remaining tuna viscera and much of the salmon viscera have been a valuable source for fish hatchery feed. Salmon eggs have been used in the preparation of bait for gamefish, as caviar, or in the production of edible salmon oil. Processed viscera has been utilized to some extent as a supplement to fish meals for animal feeding.

In summary, then, the Astoria area has adequate reduction plant capacity for the full utilization of all the various fish wastes available. The record of the past few years indicates that this area has made perhaps the best showing in the Pacific Northwest in the recovery of values from these sources. However, that much still needs to be done may be readily shown. The total potential yield of fish meal from the species of fish taken in the area, some 2,860 tons, is more than four times the reported production for the area. Fish oil production was at approximately the same ratio to potential yield.

GRAYS HARBOR AREA

Grays Harbor has been, in the recent past, a pilchard reduction center. Since the development of the albacore tuna fishery, the landings there have been heavy, although much of the tuna has been shipped elsewhere for processing. The fresh and frozen fish business has, at least for the present, attained some importance. The increasing exploitation of the

Table 4 - Miscellaneous Fish Landings - Grays Harbor Area - 1943

Month	Albacore	Flounders & Sole	Halibut	Lingcod	Rock-fish	Salmon	True Cod	Crab ^{1/}	Total
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
January	-	26,698	-	10,764	62,138	2,176	-	78,250	180,026
February	-	49,142	-	31,974	109,038	21,734	-	130,250	342,138
March	-	108,312	-	20,447	137,483	331,465	862	136,000	734,569
April	-	111,198	6,071	29,136	227,726	184,589	1,900	327,000	887,620
May	-	379,624	34,843	47,991	201,263	424,898	800	388,000	1,477,419
June	-	195,285	65,403	56,142	87,230	501,355	3,788	725,000	1,634,203
July	300,365	23,443	423	18,000	24,101	399,983	844	271,500	1,038,659
August	1,470,938	62,090	-	24,381	6,772	680,000	8,863	155,800	2,408,844
September	2,528,242	131,326	-	21,218	15,930	796,304	8,920	41,000	3,542,940
October	270,797	47,700	-	15,175	77,514	871,782	382	-	1,283,350
November	-	70,079	-	15,800	109,267	220,242	379	-	415,767
December	-	39,277	-	19,100	92,603	182,850	166	-	333,996
Total	4,570,342	1,244,174	106,740	310,128	1,151,065	4,617,378	26,904	2,252,800	14,279,531

^{1/} Calculated from numbers of crabs landed using 20 lbs./dozen as conversion factor.

^{2/} In addition 151,327 pounds of grayfish livers were landed.

otter-trawl fishery has influenced several larger companies to convert their former buying stations there into filleting plants. Preparation of crabs for canning and for the fresh market is largely centered in this portion of the Washington Coast.

Available Waste Material--The landings of miscellaneous fish in the Grays Harbor area, as reported for 1943 by the Washington State Department of Fisheries, are listed in Table 4. Crab scrap from the landings listed is somewhat scattered over the area, but if 50 percent of the 563 tons of waste could be processed, 70 tons of meal could be recovered; on the basis of analysis of a lot of crab scrap prepared in this laboratory, this would return \$30 per ton at current prices.

Landings of grayfish livers for 1943 were 151,327 pounds. This indicates a potential carcass supply of 757 tons provided the fishermen were offered a sufficiently high price to warrant landing them.

Disregarding the theoretical possibilities of grayfish carcasses and crab scrap as raw material, and considering only those sources which were definitely available, as listed in Table 5, there was a volume of 1,190 tons of offal for reduction purposes. A small-scale

Table 5 - Potential Fish Waste and Byproducts Available therefrom at Grays Harbor - 1943

Species	Waste	Oil Recovery	Meal Recovery	Value of Byproducts
	Lbs.	Gallons	Tons	Dollars
Albacore	1,95,200	480	8	768
Flounders and Sole	933,100	3,728	78	7,540
Halibut	9,600	50	1	104
Lingcod and True Cod	44,460	175	4	377
Rockfish	340,300	3,360	70	6,776
Salmon	2,452,630	4,530	39	5,060
Crab	1,126,400	-	141	4,230
Totals	3,511,690	12,333	341	24,555

1/ Based on pack of 10,878 cases $\frac{1}{4}$ flats.

2/ Based on receipts of round salmon, assuming 10 percent dress-out loss.

reduction plant should be able to handle all this raw material. A production of 200 tons of meal and 12,300 gallons of oil would return approximately \$21,000 gross revenue even if the crab scrap and grayfish carcasses were not available for processing.

Present Plant Usage and Capacity--As was true of the Astoria area, the reduction equipment in Grays Harbor, for the most part, had been installed for the pilchard fishery, and the operators have felt that the volume of fillet waste, scattered over a considerable distance from the processing plant, was not sufficient to warrant the cost of collecting the waste material.

Within the past year, a newly-organized company has installed hoppers at the source of waste materials to facilitate the trucking of the scrap to their plant. All types of offal are to be utilized, including crab scrap, salmon and tuna waste, fillet waste, and grayfish carcasses. The new plant has batch-type, steam-jacketed, rotary cooker-driers equipped with vacuum pumps to facilitate removal of moisture. The initial installation includes two batch driers which lend themselves to the processing of diverse waste materials. Each of these driers is designed to handle approximately four tons of raw material per eight-hour day. Each lot of offal can be handled in a manner adjusted to produce the best quality product with the most efficiency.

PUGET SOUND AREA

Although Seattle is the largest fish marketing center of Puget Sound, significant quantities of fish are landed at other ports within the area. Of these, the Bellingham-Blaine and the Anacortes districts have the greatest possibilities as centers of fish waste reduction. The former receives sizable landings of bottom fish and grayfish livers, especially during the winter months, while most of the Puget Sound salmon canneries now in operation are located in or near Anacortes. Seattle regularly receives the fares of the halibut fleet, the otter-trawl fleet, and a part of the troller fleet. Furthermore, much of the fish landed initially in upper Puget Sound or on the Washington Coast also finds its way to market through Seattle either directly or indirectly.

Several factors have a bearing on the availability of fish waste in the Puget Sound area. As may be seen from Table 6, which lists the fish caught by area of capture, a rather small

Table 6 - Landings of Miscellaneous Fish in the Puget Sound Area - 1943, by Area of Capture

Species	Gulf	Bellingham Bay	San Juan	West Beach	Anacortes 1/	Port Gardner	Hood Canal	Tacoma 2/	Outside	Total
Flounders & Sole	580,410	145,060	70,200	105,800	148,630	162,100	78,920	131,690	10,466,500	11,889,310
Lingcod	321,720	14,535	35,500	-	12,530	34,970	13,290	23,300	4,760,850	5,216,705
Rockfish	18,885	3,690	12,660	8,210	13,810	28,540	-	83,630	3,917,600	4,087,025
Sablefish	460	-	-	11,810	7,100	-	-	-	1,493,300	1,512,670
True Cod	268,090	44,130	15,540	38,780	12,590	4,240	11,940	9,040	573,400	977,750
Grayfish	1,390,500	103,000	150,000	280,000	166,100	-	-	-	-	2,089,600
Ratfish	686,420	64,535	149,160	238,780	13,145	-	5,345	-	-	1,157,385
Grayfish livers	305,450	102,300	7,600	-	97,900	-	-	-	1,549,900	2,063,150

1/ Includes Port Susan, Coupeville, Saratoga Passage, and Kingston.

2/ Includes Case Inlet and Carr Inlet.

part of the total landings came from inside waters. Those fish brought from outside waters could be landed at any one of the Puget Sound ports. The choice of port would usually be made on the basis of the home of the crew, and on market conditions. Seattle receipts were reported by the Fishery Market News Service, but for the other ports on Puget Sound, such data were not available in every case. Only by the proximity of the chief markets to the area of catch shown, could a rough approximation be made of available waste in these instances. An estimate of the landings of sole, flounders, and rockfish at ports other than Seattle can be made by comparing the Puget Sound landings (Table 6) with those for Seattle only (Table 7).

Table 7 - Landings of the Otter Trawl Fleet at Seattle and the Waste Potentially Available Therefrom-1943

Month	Flounders		Rockfish		S O L E	
	English		English		English	
	Landings	Waste	Landings	Waste	Landings	Waste
January	25,614	19,210	8,724	6,370	36,262	25,380
February	15,548	11,660	96,912	70,745	92,021	73,620
March	9,495	7,120	281,904	205,790	182,695	146,160
April	10,060	7,545	534,296	390,040	330,450	264,360
May	12,790	9,590	419,000	305,870	155,650	121,520
June	410	310	251,392	183,516	21,435	17,150
July	-	-	248,040	181,070	5,685	4,550
August	-	-	98,215	71,700	6,725	5,380
September	20,435	15,325	558,885	407,990	126,520	101,220
October	6,165	4,625	335,400	244,840	94,185	75,350
November	22,303	16,730	172,963	126,260	271,000	216,800
December	28,302	21,225	74,944	54,710	131,780	105,425
Total	151,122	113,340	3,080,675	2,248,901	1,454,408	1,159,915

Month	S O L E (Cont'd.)		Petrale		Turbot		Total	
	Pounds		Pounds		Pounds		Pounds	
	Landings	Waste	Landings	Waste	Landings	Waste	Landings	Waste
January	-	-	-	600	-	420	71,200	51,380
February	6,760	4,730	22,140	15,500	233,381	176,255	240,141	176,255
March	56,520	39,560	61,095	42,770	591,709	441,400	648,225	441,400
April	107,180	75,025	104,321	73,025	1,086,307	809,995	1,193,487	809,995
May	1,336,453	935,520	56,195	39,340	1,980,088	1,414,840	3,316,541	2,429,840
June	1,204,775	843,340	12,110	8,480	1,490,122	1,052,796	2,694,897	1,905,536
July	872,025	610,420	201,690	141,180	1,327,440	937,220	2,199,465	1,578,440
August	599,975	419,980	366,075	256,250	1,070,990	753,310	1,670,965	1,109,620
September	397,467	278,225	731,826	512,280	1,835,133	1,315,040	2,232,603	1,627,320
October	282,248	197,575	931,424	652,000	1,649,422	1,174,390	1,931,670	1,371,780
November	154,017	107,810	46,566	32,600	666,849	500,200	820,866	602,810
December	5,156	3,610	11,389	7,970	251,571	192,940	256,727	192,940
Total	5,022,576	3,515,755	2,545,431	1,781,815	12,254,212	8,819,766	17,776,788	12,639,526

Bellingham-Blaine District

Available Waste Material--At present, the principal sources of waste come from the fresh fish processor-wholesalers. In addition to these cleaning and filleting wastes, moderate

quantities of grayfish carcasses are landed. There are many indications that far larger amounts of reducible waste will be available in the future, especially if new cold-storage facilities are installed and if the fishermen could be influenced into delivering all grayfish carcasses.

Present Plant Usage and Capacity--Two plants have operated on fish wastes in this district, but at present only one is active. The equipment used is the batch-type, steam-jacketed, cooker-drier, with a hydraulic press for removal of the oil from the dried meal. Recently, the capacity of the plant has been doubled with the installation of another drier unit. Offal processed includes market and fillet waste, and grayfish carcasses.

The recent increased landings of grayfish carcasses at Bellingham appear to warrant either the expansion and improvement of the present facilities in the district or the establishment of a local fish reduction plant right in Bellingham. Then, too, the increased volume of filleting at Bellingham, coupled with the projected cold-storage installation, indicates that a sizable waste material supply will be available in the future. The establishment of fish and liver buying stations in the district by some of the larger Seattle companies is also significant.

Anacortes District

Available Waste Material--In Anacortes, fillet waste does not constitute a large volume of available raw material. During the salmon season, the offal from the canneries amounts to approximately 1,715 tons (based on the 1943 salmon pack in Puget Sound). Potential by-products from this waste would amount to 286 tons of meal and 27,270 gallons of oil with a combined value of \$35,000.

Grayfish carcasses are probably the next best single raw material source. Landings for the entire Puget Sound area amounted to 1,045 tons of grayfish and 579 tons of ratfish, but the grayfish livers landed indicate that there are 9,290 tons of carcasses as potential raw material not at present brought to port. A large share of the landed carcasses are already going to Anacortes, and the major part of the potential landings could be delivered at this port.

As soon as the war conditions no longer require the concentration of salmon cannery activities, the collection of cannery offal will again become more of a problem. Unless the filleting and market wastes continue at present unusual levels, grayfish carcasses will again become the best source of material for reduction purposes.

Present Plant Usage and Capacity--Several plants have been operating on fish wastes in Anacortes. One company has the "wet reduction" type of equipment. Salmon cannery offal has been processed there for some time by this method. The company now contemplates trucking fillet waste from the Seattle waterfront for reduction to oil and meal.

Another concern has handled the reduction of grayfish carcasses on a reasonably large scale. Batch-type cooker-driers are used, rendering the operation more flexible. Fillet waste and cannery offal have been processed as well. Fishermen have been encouraged to land all grayfish carcasses for several years. Those fishermen who have done this are said to be well satisfied with the additional revenue from this source. It is probable that if sufficient supplies of carcasses were available to enable the reduction plant to operate continuously, the price for the carcasses could be substantially increased.

Seattle District

Available Raw Material--The landings of the otter-trawl fleet, as reported by Fish and Wildlife Service Market News summaries for 1943, and the potential available waste from this source, by months and by species, are given in Table 7.

Present Plant Usage and Capacity--Plants which have handled fish waste in the Seattle area include one general rendering concern and one fish reduction unit. The rendering plant was destroyed by fire in 1943, and fish wastes are not processed in the new plant. Their previous operation involved transportation of the offal, in drums, by truck from the fish houses to the plant.

The fish reduction plant, which has operated the past season, is located at a distance from the Seattle waterfront. Waste materials are brought to the plant by means of barges which periodically collect the fish offal from storage hoppers located under the Seattle waterfront fish houses. Equipment of the plant consists of a battery of batch-type, low pressure steam cookers, a hydraulic press, and a rotary-type steam tube meal drier. While the capacity of such an arrangement is limited, operations have been carried on successfully at this location for many years.

The total output of oil and meal for the Seattle area is by no means abreast of the potential production. Otter-trawl fish wastes listed in Table 7, plus the miscellaneous wastes shown in Table 8, indicate what the potential production could be. The meal yield

Table 8 - Potential Fish Waste and Byproducts Available therefrom at Seattle - 1943

Species	Waste	Oil Recovery	Meal Recovery	Value of Byproducts
	Lbs.	Gallons	Tons	Dollars
Halibut	1,300,000	9,750	109	13,262
Herring	100,000	500	9	912
Lingcod and Sablefish	844,500	8,476	110	12,566
Salmon	2,063,000	19,265	170	22,610
Totals	4,307,500	37,991	398	49,350

from the fish waste available (exclusive of grayfish carcasses) would be some 1,133 tons, oil yield 73,270 gallons, and total value, \$120,497.

GENERAL DISCUSSION

The fishermen may feel that, due to the somewhat limited carrying capacity of his boat and the present prices offered, grayfish carcasses cannot be profitably landed. However, the balance of the waste reported above was delivered to the dock. Disposal of wastes by dumping into the waters of the bay constitutes a health hazard, while the practice of hauling waste to remote places for dumping is obviously not economically sound. The amount which can be used as a source of food by mink ranchers or for fish hatcheries is quite limited. These users usually require cold-storage space which at present is urgently needed for other purposes.

All of the areas discussed show definite possibilities for increasing their production of fishery byproducts. The need for increased reduction plant facilities is most evident in Seattle, which port has fallen far behind the Astoria area in the utilization of these valuable raw materials.

A good example of the practical possibilities in this field is the fishery industry in the vicinity of Vancouver, B. C., where several of the larger fish companies have now developed their byproducts departments to the point that they operate on some fish waste practically the entire year. Types of materials include fillet waste, market waste, cannery offal from herring and salmon operations, pilchards, and grayfish carcasses. When these operations are combined with the preparation of, and blending of, animal and poultry feeding oils, and the processing of fish livers into vitamin oils, the actual losses from the fish as taken from the water are very small indeed.

APPENDIX

Waste from filleting of otter-trawl-caught fish has been calculated from the total landings by use of the following percentages of dress-out loss:

English Sole - 80 percent	Other Sole - 80 percent	Flounders - 75 percent
Petrale Sole - 70 "	Rockfish - 73 "	Lingcod - 52 "
Dover Sole - 76 "	Turbot - 70 "	Sablefish - 62 "

For the Astoria area the assumption has been made that 90 percent of the Oregon otter-trawl catch came to Astoria in the round.

Oil yield from fillet waste has been calculated at eight gallons per ton of waste.

For all types of fish waste, the conversion factor of six tons of waste per ton of meal was used, and for crab waste, the factor was four tons of waste per ton of meal.

Sablefish and lingcod are normally landed dressed, and marketed in substantially the same forms as received. In seasons of heavy landings, and for certain market demands, filleting has been resorted to, however. For this report, 25 percent of total landings have been calculated as moving into fillets.

Halibut are brought to port dressed heads on. Most dealers have adopted the practice of removing the cheeks from the heads. Waste, therefore, has been calculated at nine percent of total landings. Oil yield from the heads was estimated at 15 gallons per ton of waste.

The data on landings for albacore tuna do not give a true picture as to availability of waste from this fishery. For example, Astoria canneries were processing the major portion of the landings of the Washington and Oregon coast ports. For this reason, the actual case pack of canned fish in the area studied has been used as a means of calculating the potential waste. A rather large volume of tuna went into the fresh fish market also, although data on the exact amount was not available. The method used for calculation of the tuna waste was as follows:

Standard weight of fish in a case of 48 $\frac{1}{2}$ flat cans was 21 pounds. Canned fish was taken as 40 percent of round weight.

The 60 percent waste was divided into three portions consisting of 8 percent liver and viscera, 27 percent pre-cook loss (water, oil, and protein), and 25 percent cannery waste or dressing loss. Only the latter 25 percent was considered available for reduction purposes. Oil recovery for tuna waste was estimated at 10 gallons per ton of offal.

The volume of salmon waste was likewise based on the reported case pack of canned fish for similar reasons. The other factors considered in arriving at oil yields were species, season of the year, and place of catch. Waste was calculated as follows:

Standard weight of fish in case of 48 1 $\frac{1}{2}$ talls was 46.5 pounds. Canned fish was taken as 60 percent of the round weight.

Variations of oil content, by species, was used as:

Chinook - 15 to 40 gallons per ton of waste.	Silver - 25 to 35 gallons per ton.
Sockeye or blueback - 25 to 40 gallons per ton.	Chum and steelhead - 10 gallons per ton.

Grayfish carcasses potentially available from the livers landed were calculated on the basis that they constituted ten percent of the body weight. Such carcasses, as usually processed, yield ten gallons of oil per ton.

Crab waste was calculated from the number of crabs landed. This figure was converted to pounds by using the conversion factor of 20 pounds per dozen crabs. The edible portion of the crab amounted to 20 percent, and it was assumed that there would be a loss of 30 percent in handling and storage through drainage of liquors and decomposition of viscera. The balance of 50 percent of the landings was available as waste for reduction purposes. Crab waste yields no oil, but the meal has been calculated at the rate of one ton per four tons of scrap.

For purposes of evaluation of the byproducts from fish waste, an average value of 60 cents per gallon was used for all types of oil. Meals are sold on protein content and the tabulation of common types of meal at current prices for average protein content as used for calculations in this report follows:

Miscellaneous fillet waste meal	• \$68.00 per ton	Tuna meal	• \$60.00 per ton
Grayfish meal	• 85.00 " "	Halibut meal	• 68.00 " "
Salmon meal	• 65.00 " "	Crab meal	• 30.00 " "

GRAYFISH LIVER TRADING ON A POTENCY BASIS FOSTERS CONSERVATION

By F. E. Sanford*

A recent study of the local grayfish (dogfish) fishery, made by the Seattle Fishery Technological Laboratory in collaboration with the State of Washington Department of Fisheries, determined that it was uneconomical to catch immature grayfish because both the oil content of their livers and the vitamin A potency of the liver oils were low.

When grayfish livers are bought on a weight basis, this effect is not immediately discernible, especially if they are purchased at a straight price per pound regardless of size. Buyers in the Seattle area have tended to differentiate between large and small livers in establishing prices, but as it is difficult to determine vitamin A value by visual inspection, the small livers are usually overpriced. Obviously, the buyers must make up the loss on small livers by paying less than the full worth of the large livers of higher potency. The net result is that large livers bring a lower average price than their potency warrants. Those fishermen who bring them in do not receive the full value of their product because, in effect, they are subsidizing the catching of the immature fish.

Governmental action regulating the size of grayfish to be landed offers a solution to the problem, but such a procedure inevitably meets with so many practical difficulties that action of this nature may be long delayed. If livers were sold only on a potency basis, the need for such Governmental regulation would be reduced because economic forces would then limit the catch of immature fish.

It should be pointed out, however, that the measure of protection afforded by these economic forces may not be sufficient to prevent depletion, and Governmental action may still be necessary. It should be recognized further that sale on a potency basis will not prevent completely the taking of small grayfish because the fishermen have only a limited choice as to the size of fish they catch. Nevertheless, to the extent that fishermen can control the size of the fish taken, the sale of grayfish livers on a potency basis will tend to conserve a highly valuable resource which appears subject to rapid depletion.

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NOMOGRAPH FOR THE DETERMINATION OF LIVER POTENCY

By F. Bruce Sanford,* Manuel Cantillo,** and Glenn C. Bucher*

Calculating the number of units of vitamin A per pound of liver is tedious and time-consuming because three factors--oil content, oil potency, and the grams:pounds ratio--have to be multiplied together. Where extreme accuracy is not required, the use of nomographs as shown on pages 17 and 18 will be advantageous, and even where greater accuracy is desired, the nomographs will be found useful to check computations.

All that is required to use the nomographs is a transparent ruler. An edge of it is placed on the left-hand column at the value corresponding to the given oil content while the value corresponding to the given oil potency is similarly located on the right-hand column. After checking both the left and right-hand columns to make sure that the ruler has been correctly oriented, the value of the liver potency is read from the point where the edge of the ruler intersects the central column. For example, using the first nomograph, the liver potency of a shipment, which contains 70 percent oil testing 12,000 units of vitamin A per gram, would be determined by placing the edge of the ruler to cross the left-hand column at 70 and the right-hand column at 12,000; the ruler edge then crosses the center column at 3.81, the number of million units of vitamin A per pound of the liver. In case the calculations were made on a shipment of soupfin livers testing 70 percent and 120,000 (10 x 12,000) units, the liver potency should be read as 38.1 (10 x 3.81).

The first nomograph was designed primarily for use with grayfish (dogfish) livers in the range of potencies ordinarily encountered in the Pacific Northwest, but it is also suitable for use with male soupfin shark livers in the oil potency range from 55,000 to 220,000

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** Fellow in Technology, Seattle Fishery Technological Laboratory.

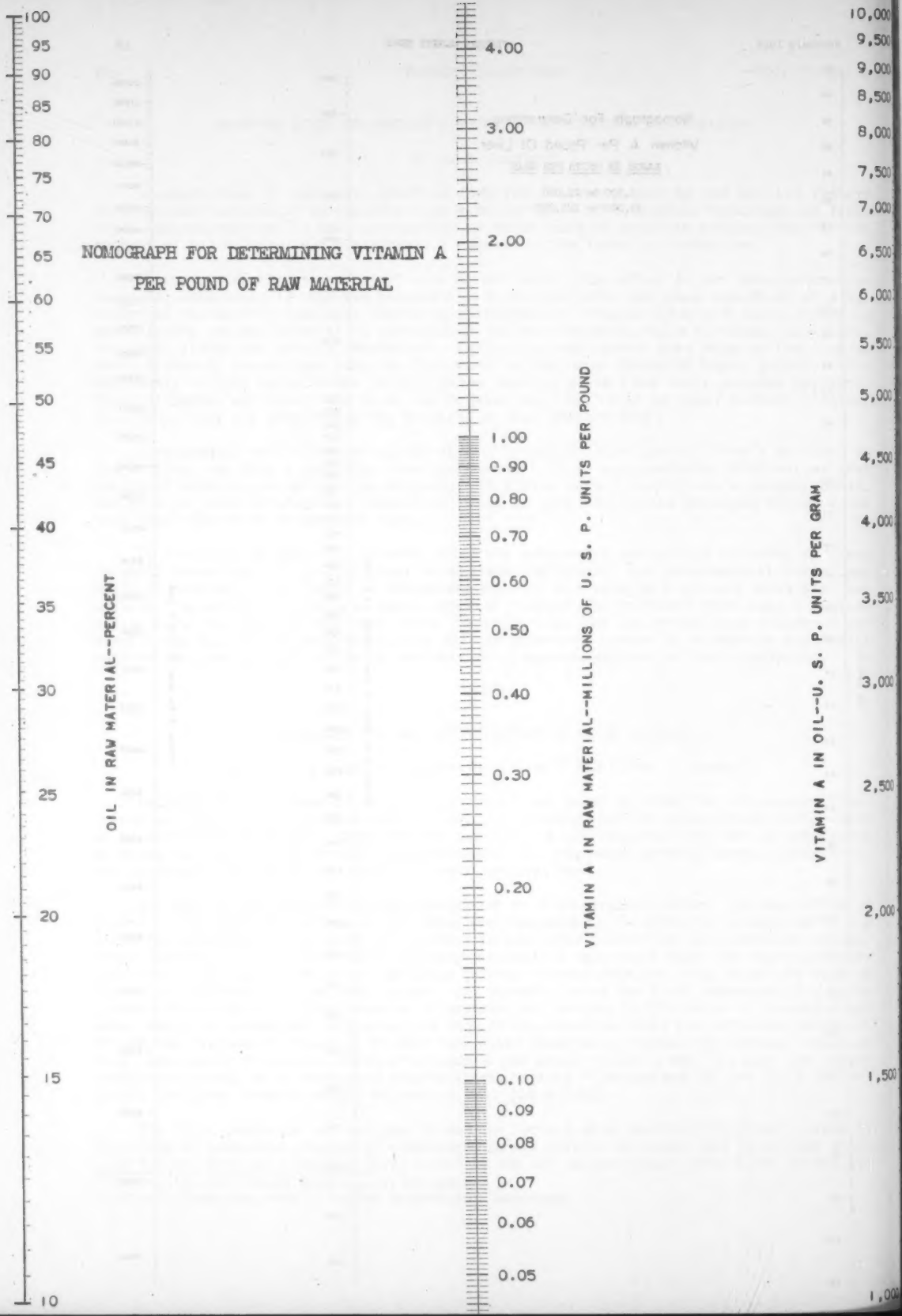
Nomograph For Determining
Vitamin A Per Pound Of Liver

RANGE IN UNITS PER GRAM

5,500 to 22,000

55,000 to 220,000





units. All that is required is to multiply mentally the oil potency by ten and then to remember that this will result in a tenfold increase in the liver potency.

The second nomograph was prepared to cover a complete tenfold range of oil contents--10 to 100 percent--and of oil potencies--1,000 to 10,000 units. By use of a decimal factor--1/10, 10, 100--it can be used with any liver, viscera, or flesh material used as a source of vitamin A. Obviously, this increase in range proportionately decreases the accuracy of the results obtainable.

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FETAL LIVERS OF THE GRAYFISH

By F. B. Sanford,* K. Bonham,** W. Clegg,* and G. C. Bucher*

In a recent study of the grayfish, livers of the fetuses found in six pregnant females were examined for oil content and vitamin-A potency. The livers of four of the female parents were similarly examined. An interesting observation was that the fetal livers were exceptionally high in oil content as compared with those from the smallest fish taken in commercial catches. The fetal livers ranged from 61 to 65 percent oil; whereas, a group of 14 livers from male fish, 12.2 to 15.7 inches in length, averaged 28 percent oil. A group of 18 livers from female fish, in the same length range, averaged 23 percent oil. (Grayfish average about 10.6 inches at birth.^{1/}) The high oil content of the fetal livers and the low oil content of livers from the very small fish indicate that the liver acts as an energy reservoir during the period immediately following birth.

The fetal livers contained oil of very low vitamin A potency, ranging from 140 to 240 U.S.P. units per gram of oil, except for one group of fetuses which were markedly more potent (870 units per gram). The liver oil of the female from which the latter fetuses were taken also showed an extraordinarily high value; this indicates that there may be a correlation between the potencies of the liver oils of the mother and of the fetus.

Table 1 - Oil Content and Vitamin A Potency of Livers from Pregnant Female Grayfish and from Advanced Fetuses found therein

THE MOTHER		THE FETUSES	
Oil in Liver	Vitamin A in Oil	Oil in Liver	Vitamin A in Oil
Percent	U.S.P. Units Per Gram	Percent	U.S.P. Units Per Gram
82	2500	65	160
70	5400	61	140
78	6400	63	220
69	87000	63	870
Not available	Not available	64	210
" "	" "	61	240

While the oil content of the fetal livers averaged 84 percent as great as that of the maternal liver, the vitamin A potency of the former was very small as compared with the liver oil from the mother. Also, the vitamin A potency was very low even when compared with that from small grayfish. Liver oil from the 14 male fish already mentioned averaged 4,400 units, while the 18 female fish produced liver oil averaging 3,200 units.

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JACKSONVILLE MARKET NEWS OFFICE IS REOPENED

The Jacksonville, Fla., office of the Market News Service, Division of Commercial Fisheries, reopened January 17 with offices at Room 204, 221 West Adams Street, Jacksonville, Dr. Ira N. Gabrielson, Director of the Fish and Wildlife Service announced on January 16. The Jacksonville Market News unit was inoperative for nearly a year and a half, having been closed August 31, 1943, because of lack of operating funds. Charles D. Stewart resumed

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** Biologist, formerly with Washington State Fisheries Department, now with Hawaiian Division of Fish and Game, Honolulu.

1/ "Biological and Vitamin A Studies of Dogfish, *Squalus suckleyi*, Landed in State of Washington," by K. Bonham, F. B. Sanford, W. Clegg, and G. C. Bucher, Department of Fisheries, State of Washington, Biological Report in press.

charge. The office will issue daily bulletins and monthly summaries containing market information of interest to the fishing industry in the southern area and in the northern sections which are important markets for southern seafoods.

For the present, principal coverage will be given to shrimp, the South's leading fishery product. Bulletins will report production and canning of shrimp on the South Atlantic and Gulf coasts, truck and rail shipments of fish and shrimp out of Florida producing areas, and receipts and prices of southern fish and shellfish in the New York markets. In addition, a weekly summary of cold-storage holdings will be issued.

OCF TO SET LIMITS TO PILCHARD DELIVERIES

General Direction P-17 of the Fisheries Coordinator of Area II was issued January 4 from San Francisco. Excerpts from this direction, Limitation of Deliveries, follow:

(a) *Setting Limitations.* Whenever pilchard (sardines) are being brought in to any port in such quantities that in the opinion of the Area Coordinator for Area II, they are being unloaded only after unreasonable delay and resulting substantial loss of fishing time by some of the vessels or are being processed fully after unreasonable delay and resulting substantial loss of food value from the product, or when for any other reason in his opinion such action is reasonably necessary in order to accomplish the purposes of the Pilchard Order, the Port Supervisor, pursuant to instructions to be given by the Area Coordinator, shall limit the amount of pilchard (sardines) which each vessel may thereafter bring into such port daily. The limits shall be set by the Port Supervisor for each day at an amount which, in his opinion, will provide the maximum tonnage which will be unloaded and processed properly and without unreasonable delay on that day by the processing equipment and labor then available in that port. The limits shall be changed from day to day as deemed necessary by the Port Supervisor, but except as otherwise provided herein shall be the same for all vessels on the same day. For the purpose of this direction, the term "pilchard" shall be construed to include any fish taken by a vessel operating under a pilchard permit.

(b) *Notice of Limits.* Notice of the fixing of limits, and of the maximum tonnage limits set for each day, shall be given by posting a statement thereof at least two and one-half hours before sunset on the preceding day, as follows: at San Pedro, in the office of the Port Supervisor; at Monterey, on the U. S. Coast Guard War Emergency Bulletin Board on Fishermen's Wharf; at San Francisco, outside Fishermen's Hall on Fishermen's Wharf, or if the weather is bad, just inside the hall. If a notice is so posted, ignorance thereof by

any person shall not excuse any violation of this direction. If any person interested does not secure information elsewhere as to the limit so fixed for a certain day, he shall secure it by telephone, radio, or other communication with the Port Supervisor.

(c) *Exceptions.* Whenever it shall have been determined by the Area Coordinator for Area II that the catch of any vessel or group of vessels has been materially lowered by reason of their previously operating under permits amended pursuant to paragraph (f) (3) of the Pilchard Order, the Port Supervisor may set a higher limit for such vessels than for the remainder of the fleet. Whenever a permit has been issued subject to the condition expressed in the permit or in a letter to the permittee accompanying the permit when issued, such condition specifying that it might be necessary to limit the catches of the vessel because the permit is being granted at the request of the permittee for a port which is already well supplied with vessels for the season, the Port Supervisor may set a lower limit for such a vessel than for the remainder of the fleet; moreover, the procedure described herein may be used to set limits applicable to such a vessel, when deemed necessary as set out in paragraph A above, even though it is not deemed necessary to fix limits for other vessels in the port. Whenever a vessel has, because of emergency or otherwise, been allowed to land a load in excess of the limit fixed, limits may be set for the vessel for one or more following days below those for other vessels in the port.

(d) *Violations.* No person shall knowingly bring into such port a load of pilchard (sardines) in excess of the applicable limits so fixed, and any violator of this direction shall be subject to the remedial proceedings described in paragraph (e) of the Pilchard Order; *Provided, however,* That where there has been a bona fide mistake in estimating

the weight of the load, a five-ton margin of error shall be allowed so that if any person bringing in a load of pilchard (sardines) has aimed to keep his load within the applicable limit so fixed, but by mistake brings in not more than five tons in excess of that limit, he shall not be deemed to have violated this direction. In addition to the remedial proceedings referred to above the Port Supervisor may, in his discretion, require delivery of such load at another port, or delay dispatching any vessel bringing in such a load for delivery of its load, or may cancel any dispatching direction already given for such load, or as to any part thereof, until delivery of the load will not affect adversely deliveries from vessels which have not violated the order. He may also, in his discretion, set limits for the vessel for following days below those for other vessels in the port; the lowered limits may be such as to reduce actual deliveries by such vessel to an aggregate amount equal to or less than the aggregate tonnage it would have delivered if it had complied with this direction. No person shall take delivery of any part of a load of pilchard (sardines) in excess of five tons over the applicable limit for the load in question except pursuant to a direction expressly applicable to such excess tonnage given by the Port Supervisor or his Assistant with full knowledge of the facts.

(e) *Representative of Area Coordinator, termination of limits.* Any of the Area Coordinator's functions under this direction, in his absence or inability to act, may be performed by his representative. Limitation of pilchard catches as set out herein is a temporary expedient and shall be terminated by the Port Supervisor as soon as possible when by reason of amending permits or other change of circumstances it is in his opinion no longer necessary.

TEMPORARY OCF ORDER PERMITS DELIVERIES OF SMALL PILCHARDS

Deliveries of small pilchards in Monterey by small boats was permitted from January 27 to February 2 by General Direction P-18, issued on January 27 by the OCF's Coordinator for Area II. Excerpts follow:

A. Any person in the operation of any vessel of 20 net tons or less may bring in loads of small pilchard (sardines) and deliver the same at the port of Monterey, including Moss Landing, on or before February 1, 1945; such deliveries, however, shall be subject to the following limitations and provisions:

- (1) All the limitations and provisions of General Direction P-13 shall apply to the actions of the fishermen bringing in such loads and the actions of the processor receiving delivery thereof.
- (2) No person operating under this direction shall bring in any load of fish unless he has an order from a processing plant for the same. Fishermen operating under this direction must accept the responsibility for finding their own market for the fish they bring in; the Port Supervisor will not dispatch these loads nor aid fishermen in finding a market for them.

- (3) Any load of fish which is dispatched by the Port Supervisor shall have preference in unloading over any load brought in under this direction.
 - (4) All relevant provisions of the California Fish and Game Code must be observed.
- B. This direction is for temporary application only, and shall not apply to any deliveries made on or after February 2, 1945.

COMMITTEE REPORT ON CONSERVATION OF WILDLIFE ISSUED

The House Select Committee on Conservation of Wildlife Resources has issued a report on its 1943 and 1944 operations. This 39-page summary, entitled Conservation of Wildlife-- House Report No. 2097, 78th Congress, 2nd Session, indicates the scope and results of hearings held before the Committee.

ESSENTIAL OCCUPATIONS LISTED FOR GUIDANCE OF DRAFT BOARDS

Director of War Mobilization and Reconversion James F. Byrnes announced on January 15 that he had requested Major General Lewis B. Hershey, Director of Selective Service System, to take measures to control the induction into the Armed Services of men in the 26 through 29 age group so as to minimize as much as possible the effect on essential activities.

Justice Byrnes stated that representatives of the WFB and the procurement agencies have reported to him that the withdrawal of men in this age group now having occupational deferment will have an adverse effect on production.

"Every effort must be made to protect the more essential activities to the fullest extent consistent with the numbers of men to be inducted," he stated.

The War Manpower Commission has prepared a list of essential activities with the assistance and concurrence of government production agencies which includes not only war industries but also the civilian activities necessary to sustain the war effort. The critical war programs are to receive priority in this list of essential activities.

General Hershey has been requested by Justice Byrnes to ask the local boards in inducting men in this age bracket to give consideration to a priority of withdrawals which would call:

1. Registrants not employed in any of the activities on the list,
2. Registrants engaged in relatively unimportant jobs in the essential but not critical activities, and registrants who may be replaced without difficulty,
3. Registrants employed in relatively unimportant jobs in critical war programs, and registrants in such programs who may be replaced without difficulty,
4. Registrants engaged in relatively more important jobs in essential but not critical activities, and
5. Registrants engaged in more important jobs in critical activities.

Justice Byrnes asked that special consideration be given to technical, scientific, and research personnel engaged in the essential activities if such personnel can no longer be replaced.

After pointing out that the requirements of the Armed Services for replacements will result in more than 200,000 men in the 26-29 age bracket being called for the Armed Services in the next six months, Justice Byrnes said:

"Many of these men are highly skilled and engaged in advisory work. Their withdrawal from essential activities must be undertaken most carefully to avoid substantial losses in production. However, the needs of the Armed Services cannot be met in this period from the remaining registrants in lower age groups."

In the War Manpower Commission's list of "critical" and "essential" activities, the following fishery occupations were included. All are classed as "essential."

- (5(c)) Commercial Fishing--Including fish hatcheries (conservation or commercial) and sponges: gathering, bleaching, cutting and trimming.
- (6) Processing of Food--Including production of fish, and prepared feeds for animals and fowls. Includes dried, preserved, dehydrated, frozen, canned, and other special-processed foods.
- (8) Construction--Including marine construction.

The draft exemption for captains and engineers of fishing vessels over 10 gross tons remains unaffected.

SELECTIVE SERVICE INSTRUCTIONS SENT TO DRAFT BOARDS

National Headquarters of Selective Service announced on January 19 that it had sent a letter of instructions to local boards outlining the procedure to be followed in carrying out the recommendations of the Director of War Mobilization and Reconversion in determining the men to be selected for the armed forces in the 26 through 29-year old group. Excerpts follow:

Approximately 12,000,000 men and women are now in the armed forces. Production has been maintained notwithstanding this effort due to a careful selection of registrants in the past. It follows that in most cases those who are now occupationally deferred are relatively more important to production than those who have been inducted heretofore.

You and your fellow local board members, I am certain, are anxious to do the job of selection in the way that will enable the war agencies charged with the responsibility for our fighting fronts and for our war production to discharge their responsibilities. I have assured them that you will do it well if you are told the needs of the armed forces, and are given sufficient information about the registrant, his job, his importance in the plant and the urgency of the activity in which he is engaged.

Since the armed forces need young men and since the supply of those in the age group 18 through 25 is practically exhausted, a substantial part of our calls from this time on will have to be filled with men in the age group 26 through 29. There are only 828,000 men in this age group now classified in Class II-A or Class II-B. Those who are selected for service in the armed forces must be taken as nearly as possible in the order of their essentiality, the least essential being taken first.

The Director of War Mobilization and Reconversion has furnished me with the War Manpower Commission's list of essential activities which has been revised to specify those essential activities that are most critical to the war program at this time. It is expected that the list will be revised from time to time, and that some of the activities now listed as critical will be changed to essential, but not critical. In transmitting the essential activity list, the Director of War Mobilization and Reconversion has recommended that the list be used as a guide in determining the men to be selected for the armed forces in the age group 26 through 29.

If you find that a replacement is available for a registrant, he should be classified as available for induction.

The Director of War Mobilization and Reconversion stated, "I would like to suggest also that special consideration be given to the technical, scientific and research personnel engaged in all of the activities on the list as it will be virtually impossible to replace such personnel."

When registrants in the various groups must be called will in the last analysis be determined by the size of the calls for men by the armed forces. The calls which last November reached a low of 84,000 have been increased to a total of 148,000 for the month of March. Employers must be prepared to lose physically qualified men in the age group 26 through 29 when and if the requirements of the armed forces are such as to make their induction necessary.

Recognizing your desire for full and complete information about the importance of registrants, I have advised the responsible Government agencies that they may, if they so desire, advise employees to list their employees ages 26 through 29 in the order of their importance to the plant and that they may inform you either on the Form 42-A or by supplemental statement of the comparative position of a given employee on this list.

The effect on war production of the induction of substantial numbers of men in the age group 26 through 29 will be influenced by the number of registrants who can be made available from agriculture and by the number of older men or men disqualified for general military

service who seek employment in war supporting activities. As of January 1, 1945, there was a total of 340,000 registrants in the age group 18 through 25 classified in Class II-C. On that same date there was a total of 107,000 in this age group in Classes II-A and II-B, of which approximately 65,000 were in the Merchant Marine and almost 10,000 were members of the armed forces of our allies.

Since requirements of the armed forces are primarily for men under 30 years of age, the test of "regularly engaged in" an activity in support of the national health, safety or interest or an activity in war production should still be the test applied to a registrant in the age group 30 through 37 or to a registrant of any age who would be classified in Class IV-F were he not employed in a war supporting activity, but who by reason of his employment is classified in Class II-A or Class II-B and identified by the letter (L) or (F). Registrants in the age group 18 through 37 who leave the employment for which they were occupationally deferred without the consent of their local board should be classified in a class available for service.

WPB INCREASES CONTROLS IN TIGHT LABOR AREAS

On January 25, the WPB, by issuance of Controlled Materials Plan Regulation No. 10, set up controls over the production of Class A products in Group I labor areas. The new controls supplement the controls of procuring agencies on the placing of prime contracts in these areas and the controls already exercised by WPB over increased production of Class B products.

Beginning February 12 all orders for more than \$100,000 worth of Class A products to be made in Group I labor areas must be cleared with WPB. CMP Reg. 10 describes conditions of approval for orders, enumerates exceptions, and makes definitions. Group I labor areas are those so defined by the War Manpower Commission. Splitting of orders is expressly forbidden.

WFA REVIEWS MATERIALS AND EQUIPMENT SITUATION

The nation's food industries are being asked by the War Food Administration to defer applications for materials and equipment not urgently needed to meet war food needs, the WFA announced on January 23. They are also being asked to plan their procurement and use of container materials in anticipation of short supplies and to carry out conservation and re-use programs for shipping containers, fruit and vegetable containers, and textile bags.

In a statement of facts and policy to representatives of the food trades, the Office of Materials and Facilities of WFA interprets recent war developments and recent amendments to WPB Orders L-292 (food processing equipment) and M-81 (tin cans). The conclusions are that emphasis on military production is resulting in tighter supplies of equipment and container materials, that controls over materials must be tightened, and that WFA must recommend priority assistance for only that equipment or those projects which are essential to the successful prosecution of the war.

In regard to the conservation and re-use of second-hand containers, the need for such programs is greater than ever. Intensive and extensive conservation and re-use programs offer the only hope of having enough shipping containers, wooden containers for fruits and vegetables, and textile bags to meet the minimum essential requirements of the war food program in 1945. The statement of the Office of Materials and Facilities follows:

Food Processing Machinery

Recent Action--On January 6, 1945, the War Production Board amended Order L-292, removing the restriction on the delivery of food processing equipment. Prior to issuance of this amendment, the order required that no manufacturer could deliver equipment except on an order rated AA-5 or better. WPB also revoked Orders P-115, controlling the distribution of canning machinery, and P-118, controlling the distribution of dairy and poultry machinery. The main provisions of these orders are included in L-292 as amended.

Interpretation--Removal of the rating floor on delivery of equipment should not be interpreted as a relaxation of the provisions of L-292. It merely simplifies the procedure by which equipment can be obtained by food processors and makes it unnecessary for them to file an application for priority assistance unless they are unable to obtain the equipment without a preference rating.

It is now the policy of the War Food Administration to recommend ratings within certain strict criteria (1) for equipment to maintain existing essential operations and (2) for equipment to expedite expansion which is essential to the war food program.

Elimination of the rating floor with respect to the sale of food processing equipment does not in any way affect production quotas established for this equipment under Order L-292. As in the past, manufacturers will continue to receive their schedules and authorizations to fabricate the equipment. However, military necessity has resulted in a general tightening up of all materials and equipment. This is due not only to the increased demand of the military for equipment and supplies but also to an increasing labor shortage, which is reflected in lower production of certain shapes of steel, copper, and aluminum and of critical components.

An Administrative Order recently issued by the War Production Board states that no production of equipment for civilian use shall be increased unless a positive demonstration is made that the current level is insufficient to meet minimum requirements essential to the war effort.

Only when military needs have been fully met will it be possible to consider relaxation of wartime controls. Meanwhile, the War Food Administration must continue its present policy: to recommend priority assistance for only those projects or that equipment considered essential to the war food program and the successful prosecution of the war. A project application for expansion or new construction will be considered in relation to the urgency of demand for the end product and the ability of the industry to meet the demand.

Recommended Action--Applications for equipment, or construction for postwar expansion, or for desirable but not urgent plant improvement, should be deferred.

Container Materials

Recent Developments--1. As a result of the December offensive by the Nazis on the western front, the Army, Navy and Maritime Commission have increased their procurement programs for 1945. Increases in military requirements will affect all civilian supply including, probably, even the essential food industries.

2. On January 1, 1945, WFB amended the can order, M-81, making additional food and non-food uses eligible for blackplate allocations.

Interpretation--If materials and labor were more plentiful, the changes in M-81 would represent an easing of control over the manufacture and use of metal containers. However, in view of the shortages of material and labor, the action is expected to have little effect.

Some expansion in the use of steel for containers and closures was authorized last fall, and steel for the first quarter is ample to meet essential food requirements for the first quarter. It is unlikely that the present expanded program for blackplate can be maintained in subsequent quarters.

Most of the plants producing sanitary cans for food are in critical labor areas, and it is expected that the labor supply will have as much effect on their output as the quantity of steel allocated for metal cans.

Glass container production appears to be ample, and there should be little difficulty in obtaining glass containers for essential food purposes in 1945.

Shipping cartons, folding boxes, fibre drums, paper bags, and similar items made from wood pulp and waste paper will be in shorter supply in 1945 than in 1944.

Cellophane, parchment, and other specialty papers will be in critical supply in 1945. WFA expects to secure enough sulphite pulp to meet essential food requirements this year.

Wooden boxes, veneer boxes, baskets, hampers, barrels, and other wooden containers will be considerably short of requirements in 1945.

Cotton textiles are becoming critically short, and the situation is expected to become worse month by month. We will not receive enough cotton broad woven goods to meet the need for new bags. Imports of burlap from India are now substituting to a limited extent for cotton bags, but there is no way of knowing the quantity of burlap that will be available after July 1, 1945.

Recommended Action--WFA recommends that the food industries anticipate shortages of labor, materials, and components and map out programs of procurement and careful use of scarce materials.

WFA particularly recommends food industry programs for the CONSERVATION AND RE-USE of shipping containers, wooden containers, and textile bags. The food industries have already demonstrated that such programs are effective for those types of containers. For all of these containers, conservation and re-use are necessary practices--more essential than ever before.

Only through conservation and re-use will there be enough shipping containers, fruit and vegetable containers, and textile bags to meet the minimum essential requirements of the war food program in 1945.

General Information

Of necessity the resources of the nation are directed to their most effective wartime uses. The War Production Board is responsible for directing the use of materials and facilities.

The War Food Administration is one of a number of claimant agencies and, as such, it prepares estimates and presents requirements to WFB for materials, machinery, equipment, and facilities needed in farm production and food processing. The other claimants, including the Army and Navy, perform similar services for other segments of the war economy. Claims are judged in relation to each other, as well as in relation to total supplies of materials available, so as to maintain a proper balance among the military, agriculture, food industries, and other essential industries. After a specific quantity of materials is allocated for effectuation of the war food program, WFA carries certain responsibilities for making certain that the materials are used to best advantage.

Last summer and fall, plans were made for a relaxation of government controls over materials and facilities after the defeat of Germany. Military events since that time have shelved those plans. Now Government policy and action assume that shortages of materials, facilities, and manpower will exist indefinitely.

MACHINES AND METHODS FOR TESTING CORDAGE FIBERS DESCRIBED

The National Bureau of Standards has notified the Fish and Wildlife Service that reprints of the paper Machines and Methods for Testing Cordage Fibers by Herbert F. Schiefer are available. This research paper is for sale by the Superintendent of Documents, Washington 25, D. C., for 10 cents. An abstract follows:

Machines are described for testing the flexural endurance and the resistance to abrasion of cordage fibers. In the test for flexural endurance, a bundle of fibers having a twist of one turn per inch is repeatedly drawn back and forth over three small pulleys located at the vertices of an isosceles right triangle. In the test for resistance to abrasion, a similarly twisted bundle of fibers is drawn back and forth against a second bundle twisted once around the first. This test is made in such a way that the flexing of fibers during the test is reduced to a minimum.

The procedures for the selection of fibers, preparation of fiber bundles weighing 5 grains per 15 inches of length, and conditioning of test specimens are outlined. The unprocessed fibers were tested for the following: Fineness of fiber; dry and wet breaking strength and elongation; flexural endurance; resistance to abrasion; and the effect of elevated temperatures, continuous soaking in fresh and in salt water, alternate wetting and drying with fresh or salt water, and exposure to light with intermittent spraying with water. The results of tests of six lots of abaca, nine of sisal, two of jute, two of henequen, one of pita floja, one of istle, four of sansevieria, one of palmetto, three of hemp, two of roselle, one of manzanita, two of yucca, and one of malvita are given and discussed.

Great variations were found in the characteristics of different lots and grades of one kind of fiber. There was considerable overlapping in results of different kinds. No one kind of fiber was outstanding in all respects. Abaca was the strongest of the fibers tested, but some of the lots of abaca were weaker than some lots of sisal. Henequen and sisal were more resistant to abrasion than the other fibers tested, and they had higher flexural endurance, but were the least resistant to exposure to light and intermittent spraying with water. Pita floja, one of the strongest fibers tested, was one of the least resistant to abrasion. Sansevieria had exceptionally good strength. Hemp and jute were very similar in all of the characteristics measured. The resistance to abrasion of the fibers tested was profoundly affected by the direction of twist in the ply relative to that in the bundle, and also by the addition of a small amount of lubricant.

Sectional Marketing Reviews

FISHERIES OF MAINE

The catch of lobsters on the coast of Maine last year was the largest in more than 50 years and brought lobster fishermen probably their highest income in history, according to figures released on January 3 by the Office of the Coordinator of Fisheries.

Estimates of the year's catch indicated that total production of Maine lobsters was about 14,500,000 pounds, for which fishermen received a record average price of 28 cents per pound. The 1944 catch is the largest since 1892, when 17,600,000 pounds were taken.

Production in the Maine fishery, which yields about three-fourths of the U. S. lobster catch, declined steadily between 1890 and 1920, but has shown a general upward trend since 1933 and sharp increases during the past two years. The 1943 catch was 11,500,000 pounds compared with an average production of about 8,000,000 pounds during the past decade.

The large recent catches have been made in spite of such wartime handicaps as shortages of fishermen and gear, suggesting that lobsters are becoming more abundant in Maine waters. Although reasons for the apparent increase in abundance are not definitely known, contributing causes may be a recently enacted State law prohibiting the capture of small lobsters, and the planting of approximately 200,000 young lobsters annually since 1938 as a cooperative enterprise of the State and the U. S. Fish and Wildlife Service. However, since lobsters grow slowly, the young planted in 1938 would have reached commercial size only this year.

In returns to fishermen, the lobster fishery is the most valuable seafood industry in the State of Maine, and one of the most valuable in New England. Lobsters once were plentiful throughout the North Atlantic area, but are now scarce in most sections of the coast. About two million pounds are caught in Massachusetts and less than half a million pounds each in New Hampshire, Rhode Island, and Connecticut.

FISHERIES OF VIRGINIA

The oyster fisheries of Virginia were having an unusual season, the Service's Fishery Marketing Specialist in that State reported in January. Prices to the oysterman were the highest in recollection, and the supply of oysters was rather plentiful. Despite these conditions, the supply was being continually outstripped by the demand. Demand along the Potomac River was so heavy that shucking-houses were accepting all oysters, regardless of size. One packer estimated that in his house frequently 20 percent of the stock was under two inches in length.

In the Rappahannock River area, where an unusually good set of oyster spat was reported in 1941, oyster tongs were realizing large returns. During the patent-tonging season, which closed December 31, patent-tongers were said to earn from \$50 to \$100 per man per day. With buyers competing strenuously for the limited supply, oysters sold at \$2.60 per bushel and probably higher.

Oyster production has been complicated by a scarcity of shuckers. At least one firm advertised widely in an effort to get shuckers, offering to pay 60 cents per 8-pint measure full of shucked oysters.

Fishing for menhaden in 1944 was conducted off the coastal beaches. Yield of oil was comparatively low.

Pound-net fishermen, preparing for the spring runs of alewives and shad, were concerned over a scarcity of suitable rope.

Nine trawlers were reported operating out of Hampton. Catches were larger than in 1944, with croakers predominating. Packers were able to find enough labor to box these fish for shipment.

Dredgers were reported to be finding a larger supply of hard crabs than in 1943. The current price per barrel, ten dollars, was only half of the record price reached in 1943. Labor for crab-picking was still very scarce.

At a meeting of Virginia State officials in Yorktown on January 3, consideration was given to improvement of the State's collection of statistics. A tentative arrangement was made to obtain individual catch records on a voluntary basis for a trial period as a guide for further action.

Fresh Fish Trade

THREE PORT LANDINGS IN 1944 SHOW 8 PERCENT INCREASE OVER 1943

Fishing vessels delivering their catches to the ports of Boston and Gloucester, Mass., and Portland, Maine, during December landed 15,899,000 pounds of fishery products, valued at \$1,095,000 to the fishermen, according to data published in Current Fishery Statistics No. 166 by the Fish and Wildlife Service. Compared with December 1943, this was an increase of 59 percent in volume and 94 percent in value received by the fishermen. However, it was a decrease of 26 percent in amount landed compared with November. Four items--rosefish, cod, haddock, and pollock--accounted for 93 percent of the total landings.

During December, 204 vessels made 651 trips to the fishing grounds compared with 125 vessels which made 559 trips during December 1943. The over-all weighted average price per pound received by the fishermen for their catch was 6.89 cents compared with 6.18 cents during November and 5.65 cents during December 1943, while that for the twelve months of 1944 was 5.71 cents compared with 6.80 cents during 1943.

Total landings by fishing vessels at the three ports during 1944 amounted to 357,476,000 pounds, valued to the fishermen at \$20,413,600, representing an increase of 8 percent in volume but a decrease of 9 percent in value compared with 1943.

Landings by Fishing Vessels at Boston and Gloucester, Mass., and Portland, Maine

Item	December 1944		November 1944		December 1943		Twelve mos. ending with December--					
	Pounds	Cents*	Pounds	Cents*	Pounds	Cents*	1944		1943		1942	
Cod	3,799,626	8.14	6,818,268	7.29	884,408	8.20	63,835,681	6.89	42,419,345	8.90		
Haddock	3,209,902	8.96	3,062,983	8.86	527,911	8.96	89,552,686	7.62	90,193,229	9.25		
Salmon												
White	300,375	7.52	794,268	7.58	362,484	7.44	5,596,772	6.68	4,822,937	7.35		
Red	6,178	2.75	363	3.03	489,561	2.99	2,186,811	2.47	1,832,700	3.13		
Pollock	3,171,245	6.65	3,329,111	4.48	2,316,328	6.91	18,025,224	5.24	17,375,117	6.49		
Quack	58,020	7.45	144,777	7.49	40,824	7.37	1,463,887	6.26	1,736,943	7.48		
Halibut	1,099	18.20	2,326	17.94	388	19.85	146,737	17.74	165,307	23.63		
Mackerel	60	20.00	845,960	5.21	-	-	46,433,840	4.79	36,710,655	6.49		
Flounders:												
Gray sole	104,486	8.88	101,055	8.84	97,894	8.82	1,952,154	7.81	2,234,986	8.97		
Lemon sole	118,785	16.00	15,760	16.01	-	-	876,053	10.14	1,102,411	10.96		
Yellowtail	323,163	6.50	192,365	6.51	159,463	7.34	1,883,346	6.10	2,939,803	6.99		
Blackback	58,315	9.84	22,165	7.02	57,824	9.27	1,020,855	8.30	1,263,453	8.16		
Dab	166,519	6.37	138,385	6.29	100,202	6.31	2,909,826	5.14	2,985,021	5.97		
Fluke	-	-	-	-	-	-	315	14.92	-	-		
Other	-	-	-	-	-	-	1,235	-	565	-		
Swordfish	-	-	-	-	-	-	470,776	29.88	228,162	30.00		
Rosefish	4,535,372	4.22	5,417,522	4.20	4,765,746	4.16	104,080,680	3.86	101,332,717	4.05		
Whiting	25,123	5.06	469,821	5.28	88,949	5.14	15,340,530	3.95	21,698,645	4.27		
Wolfish	8,110	7.50	16,573	5.80	8,455	6.04	880,270	5.21	597,882	7.66		
Eelpout	-	-	-	-	7,235	3.21	149,555	3.70	115,340	2.75		
Scallops (meats)	-	-	-	-	80	40.00	109,652	35.45	699,572	45.21		
Other	12,638	-	10,265	-	80,135	-	563,286	-	210,270	-		
Total	15,899,016	6.89	21,382,567	6.18	9,987,887	5.65	357,476,171	5.71	331,363,060	6.80		
By ports:												
Boston	7,240,362	8.34	9,578,239	7.40	149,349	7.19	151,761,586	6.98	142,975,235	8.82		
Gloucester	7,816,761	5.73	10,657,510	5.21	9,210,624	5.60	188,661,349	4.82	170,098,754	5.32		
Portland	841,893	5.13	1,146,818	4.99	627,914	5.96	17,053,236	4.29	18,289,071	4.76		

*Weighted average of prices per pound paid to fishermen

1944 LANDINGS AT NEW BEDFORD 21 PERCENT ABOVE 1943

Landings of fishery products at New Bedford, Massachusetts, during December totaled 2,900,000 pounds, valued at \$313,800 to the fishermen, a decrease of 14 percent compared with November, according to Current Fishery Statistics No. 167 released by the Fish and Wildlife Service. Landings of haddock accounted for 57 percent of the total. The December total was much larger than that of December 1943, when, because of a price disagreement, only four vessels delivered fishery products to New Bedford.

During December, 103 craft made 204 trips to the fishing grounds. The over-all weighted average price per pound received by the fishermen for their catch was 10.82 cents compared with 11.06 cents during November.

Total landings during the twelve months of 1944 amounted to 74,936,000 pounds, valued at \$6,281,100, an increase of 21 percent in volume and 5 percent in value compared with 1943. The over-all weighted average price per pound was 8.38 cents compared with 9.62 cents for 1943.

Landings by Fishing Craft at New Bedford, Massachusetts

Item	December 1944		November 1944		December 1943		12 mos. ending with December--			
	Pounds	Cents*	Pounds	Cents*	Pounds	Cents*	1	9	4	3
Cod	295,254	8.08	383,929	8.04	113	7.96	8,211,166	7.02	5,815,896	7.78
Haddock	1,642,473	8.97	1,321,860	8.97	-	-	22,465,994	7.49	7,926,273	7.93
Hake:										
White	7,542	7.85	13,620	7.56	5,237	3.17	250,084	6.70	334,749	4.86
Red	4,110	2.09	-	-	-	-	1,923,918	1.90	524,855	3.01
Eelpout	470	3.19	40	5.00	-	-	3,225,009	6.42	3,180,841	3.15
Pollock	13,910	6.94	1,380	4.49	-	-	222,877	5.08	136,199	6.47
Cusk	-	-	-	-	-	-	355	5.35	700	3.00
Halibut	251	17.53	28	17.86	-	-	36,623	17.30	19,169	26.24
Mackerel	-	-	462,260	6.24	-	-	6,196,405	5.05	6,330,468	8.95
Flounders:										
Gray sole	1,155	9.00	525	9.14	-	-	40,142	7.16	14,036	9.05
Lemon sole	203,865	16.00	383,439	16.00	-	-	3,704,979	10.65	1,235,906	11.08
Yellowtail	455,061	6.48	252,071	6.51	13,893	7.50	14,354,376	6.36	25,479,369	7.20
Blackback	88,956	9.93	266,462	7.00	48	10.42	8,854,012	7.07	6,705,142	7.41
Dab	480	6.46	1,265	6.48	-	-	72,212	4.99	108,316	8.02
Fluke	25	4.00	3,320	12.38	-	-	553,941	15.52	71,250	37.74
Swordfish	-	-	-	-	-	-	258,987	29.60	93,669	32.51
Rosefish	155	4.52	1,710	4.27	-	-	7,165	4.26	-	-
Whiting	919	4.35	14,487	4.18	697	4.16	134,681	3.61	96,486	3.63
Wolffish	215	7.44	55	7.27	-	-	47,385	4.74	15,619	5.39
Scallops (meats)	182,371	38.20	247,462	38.00	33	36.36	4,008,812	32.53	3,831,596	42.40
Other	3,005	-	10,241	-	512	-	366,596	-	243,169	-
Total	2,900,217	10.82	3,364,154	11.06	20,533	6.46	74,935,719	8.38	62,163,708	9.62

*Weighted average of prices per pound paid to fishermen.

DECEMBER RECEIPTS IN NEW YORK SALT-WATER MARKET 9 PERCENT GREATER THAN IN 1943

Receipts of fresh and frozen fishery products in the salt-water market in December decreased 15 percent compared with November, but increased 9 percent as compared with December 1943, according to the New York Market News office. The usual reduction of fishing activities in December due to Christmas and New Year holidays (19 trips landed at New York in December compared with 31 trips in November) was offset somewhat by an increase in catch per vessel. During December, the average catch per vessel landed at New York's Fulton Market was 41,000 pounds, while in November, the average was 28,000 pounds.

Haddock, which increased 78 percent in December, comprised 72 percent of the landings. Spanish mackerel led among southern varieties which are received in New York in large quantities during the winter months. An increase of 95 percent in pollock was attributed to a rise in the winter ceiling price beginning December 1. Decreasing the largest amounts were cod, flounders, mackerel, lemon sole, whiting, and shrimp.

The December 1943 tie-up of fishing vessels was the main contribution to the increase of 9 percent shown by December 1944 figures. This increase would have been much greater had

lesser species such as river and sea herring, common eels, sea bass, striped bass, and unclassified fillets been received in the same quantities as in December 1943.

Receipts of Fresh and Frozen Fishery Products--Salt-water Market, New York City*

Item	December 1944	Dec. compared with		November 1944	December 1943
Classification:	Pounds	Percent	Percent	Pounds	Pounds
Fish	10,360,000	- 13	+ 15	11,950,000	9,018,000
Shellfish, etc.	6,089,000	- 18	- 1	7,388,000	6,143,000
Total receipts	16,449,000	- 15	+ 8	19,338,000	15,161,000
Important Items:					
Bluefish	227,000	+428	+ 8	43,000	210,000
Butterfish	127,000	- 68	+ 55	391,000	82,000
Cod	1,664,000	- 23	+151	2,175,000	662,000
Flounders:					
Blackbacks	388,000	- 57	- 29	906,000	543,000
Yellowtail	637,000	- 33	- 4	953,000	666,000
Haddock	1,373,000	+ 78	+	770,000	44,000
Hake (including Ling)	261,000	- 15	- 59	307,000	640,000
Hallibut	351,000	- 31	+149	509,000	141,000
Mackerel	333,000	- 73	+ 6	1,250,000	313,000
Pollock	664,000	+ 95	+ 45	340,000	458,000
Salmon	284,000	+ 4	+ 10	272,000	258,000
Smelt	322,000	+ 4	- 29	310,000	455,000
Sole, lemon	243,000	- 46	+	447,000	12,000
Spanish mackerel	608,000	+711	- 30	75,000	872,000
Whiting	832,000	- 18	- 20	1,016,000	1,037,000
Clams, hard	2,074,000	- 7	+ 16	2,226,000	1,785,000
Lobsters, live	531,000	+ 11	0	480,000	531,000
Oysters, shell	1,530,000	+ 5	- 1	1,451,000	1,540,000
Shrimp (prawn)	1,275,000	- 48	- 17	2,473,000	1,535,000
Arrivals by:					
Fishing vessels (19 trips)	785,000	- 8	-	857,000	-
Truck, freight, and express	15,664,000	- 15	+ 3	18,481,000	15,161,000

*Excluding imports entered at New York City.

1944 SHRIMP AND OYSTER PRODUCTION BELOW THAT OF 1943

Due to wartime regulations, restrictions, and shortages in all fields in 1944, the shrimp and oyster industry reported a decline in production as compared with 1943, according to the New Orleans Market News office. Skilled labor was very scarce and many of the boats were manned by inexperienced crewmen. In some areas, much of the fleet was tied up at times due to this shortage. Shore plants experienced the same difficulty. Inclement spring weather also helped to reduce the total production of shrimp. Oyster production was hit by price and labor disputes and shortages.

Despite war conditions, hard crab production increased. Processed crabmeat increased 410 percent over 1943. Many shrimp plants turned to crabmeat canning to avoid idleness during the shrimp shortage in the spring.

Production of Fishery Products in the Gulf States*

Item	Unit	December 1944	December 1944 compared with		12 months Jan.-Dec. 1944	Compared with 12 months 1943	12 months Jan.-Dec. 1943
			Nov. 1944	Dec. 1943			
			Percent	Percent		Percent	
Shrimp:							
For canning	Bbls.	5,704	-65	-14	115,915	-17	138,874
Other	"	15,942	-44	-20	239,115	- 5	251,394
Total	"	21,646	-52	-18	355,030	- 9	390,268
Oysters:							
For canning	"	-	-	-	326,889	-36	507,350
Other	"	38,186	+25	+ 9	248,513	-17	298,641
Total	"	38,186	+25	+ 2	575,402	-29	805,991
Crabs, hard	Lbs.	176,200	-80	-25	11,368,787	+28	8,876,943
Crabmeat, fresh-cooked	"	13,750	-78	-45	1,107,843	+ 8	1,028,908
Salt-water fish	"	364,630	-61	-30	5,207,784	-22	6,683,995
Fresh-water fish	"	39,645	+25	+ 5	691,977	+ 4	662,525

*Includes production in Alabama, Mississippi, Louisiana, and Texas.

CHICAGO RECEIPTS OF FISHERY PRODUCTS DECREASE DURING DECEMBER

Receipts of fresh and frozen fishery products in the Chicago wholesale fish market in December were 6 percent less than those of November and 23 percent less than December 1943, according to the Service's Market News office in Chicago.

Lake trout and blue pike showed the greatest declines among fresh-water items. Lake trout comprised only 12 percent of the fresh-water total; whereas, it was 27 percent of the total for November. Unusually severe weather reportedly was responsible for the decline in receipts from many sources on the Great Lakes.

Receipts of frozen halibut were considerably greater than during the previous month and were much larger than those of December 1943. This item accounted for 57 percent of the salt-water receipts. Shrimp, 49 percent of which was received frozen, comprised 59 percent of all shellfish arrivals. In December 1943 shrimp receipts comprised 80 percent of the total arrivals of shellfish.

Receipts of Fresh and Frozen Fishery Products at Chicago

Item	December 1944	December 1944 compared with		12 mos. Jan.-Dec. 1944	12 mos. 1944 compared with 12 mos. 1943
		Nov. 1944	Dec. 1943		
Classification:	Pounds	Percent	Percent	Pounds	Percent
Fresh-water fish	2,213,000	- 20	-34	38,133,000	-10
Salt-water fish	2,346,000	+ 30	- 5	20,439,000	-32
Shellfish, etc.	850,000	- 28	-29	8,089,000	-31
Total receipts	5,408,000	- 6	-23	66,660,000	-21
<u>Important Items:</u>					
Blue pike	34,000	- 83	-91	2,237,000	+34
Carp	226,000	+ 48	-49	2,703,000	-39
Chubs	183,000	- 12	+21	1,439,000	+ 4
Lake herring	402,000	+ 53	-34	3,086,000	-25
Lake trout	270,000	- 63	-28	7,310,000	+ 4
Suckers	111,000	- 30	-54	2,373,000	-18
Whitefish	232,000	- 19	+38	5,893,000	+26
Yellow pike	259,000	+ 24	-19	3,443,000	- 8
Cod fillets	110,000	+450	-55	2,401,000	- 9
Halibut	1,332,000	+ 36	+78	7,948,000	-30
Rosefish fillets	133,000	- 4	-32	2,272,000	-16
Salmon	379,000	- 2	-19	2,651,000	+ 6
Shrimp	498,000	- 43	-48	5,758,000	-35
<u>Leading Sources:</u>					
Louisiana	259,000	- 60	-63	3,734,000	-30
Massachusetts	349,000	+ 29	-46	5,299,000	-41
Michigan	500,000	- 28	-10	7,233,000	- 6
Wisconsin	507,000	- 24	-45	7,558,000	-18
British Columbia	192,000	- 14	-75	2,761,000	-74
" " , in bond	176,000	+ 98	-	3,308,000	-
Manitoba	446,000	+321	-20	7,907,000	- 4
Domestic total	4,366,000	- 14	-12	45,948,000	-19
Imported total	1,042,000	+ 61	-50	20,712,000	-23
<u>Transported by:</u>					
Truck	823,000	- 45	-51	14,664,000	-22
Express	1,487,000	- 24	-22	27,650,000	-22
Freight	3,099,000	+ 35	-10	24,346,000	-18

RECEIPTS AT SEATTLE DECLINE SHARPLY IN DECEMBER

Receipts of fishery products at Seattle during December declined 47 percent from those of November and 46 percent from December 1943, according to the Service's local Market News office. Continued inactivity of the otter-trawl fleet was largely responsible for the sharp drop. Smaller receipts from Alaska and imports from Canada, composed of frozen fishery products, also were contributing factors. The former dropped off 25 percent and the latter 55 percent compared to December 1943. In addition, the shark fishery, which in December 1943 landed 299,000 pounds, did not unload a pound of shark. The year's total of 440,000 pounds of shark received was 74 percent below the 1943 volume.

Receipts of all fishery products for the year were 68 million pounds. This was, however, a substantial decrease, 17 percent, compared to the 1943 figure of 82½ million pounds. Influencing the 1944 over-all poundage to a considerable extent were 51 percent less imports from Canada and 22 percent less receipts from Alaska.

Receipts of Fresh and Frozen Fishery Products at Seattle*

Item	December 1944 compared with			12 mos. compared with		
	December 1944	Nov. 1944	Dec. 1943	Jan.-Dec. 1944	12 months 1943	12 months Jan.-Dec. 1943
Classification:	Pounds	Percent	Percent	Pounds	Percent	Pounds
Total fish and shellfish	2,965,000	- 47	- 46	68,140,000	-17	82,478,000
<u>Important Items:</u>						
Flounders	12,000	+	- 71	400,000	+97	203,000
Halibut ^{1/}	-	-	-	19,259,000	-21	24,384,000
Lingcod	211,000	+105	+ 10	6,276,000	-10	6,942,000
Rockfish	224,000	-40	- 8	5,610,000	+24	4,506,000
Sablefish	180,000	- 4	- 13	3,889,000	-23	5,046,000
Salmon	571,000	- 65	- 56	12,244,000	-28	16,922,000
Shark ^{2/}	-	-	-100	440,000	-74	1,680,000
Sole	153,000	- 25	- 29	6,306,000	-38	10,099,000
Shellfish	442,000	- 5	- 32	4,708,000	- 3	4,849,000

^{1/} Halibut fishing season closed Nov. 30, 1944.

^{2/} Includes shark meat.

* Halibut and shark fleets and receipts from local and all other sources.

OPA SETS WHOLESALE PRICES ON FRESH COLUMBIA RIVER SMELT

On January 19, OPA's Region VIII, in Revised Order G-6 under MPR-418, Amdt. 5, ordered the following:

1. Paragraph (a) is hereby amended to read as follows:

(a) Listed fresh fish and seafood items. The items covered by this order, hereafter referred to as "listed fresh fish and seafood items" are:

Barracuda	Totua	Crabmeat	Rex sole
California halibut	Rock bass	Kingfish	Whitebait
Black sea-bass	Live crab	Queenfish	Lobster (live)
White sea-bass	Cooked crab in shell	Herring	Smelt

This order shall apply to Region VIII of the Office of Price Administration.

2. Paragraph (b) is hereby amended by adding the following sub-paragraphs:

- (22) "Rex sole" means the species Errex zachirus caught off the Pacific Coast.
 (23) "Lobster" means the species Panulirus interruptus caught off the Pacific Coast.
 (24) "Smelt" means the species Eulachon or Thaleichthys pacificus caught in the Columbia River and its tributaries located in Region VIII.

3. A new Appendix IV is added as attached.

APPENDIX IV

Species	Item No.	Basing point	Style of dressing	Quantity ^{1/} (Pounds)	Maximum prices (per lb. of entry)		
					Table A ^{2/}	Table B	Table D
Smelt ..	1	Kelso, Washington	Round ...	0-1,500	\$0.20	\$0.225	\$0.25
				1,501-3,00015	.17	.19
				3,001-200,000 ..	.08	.09	.10
				200,001 and over	.035	.045	.055

^{1/} The quantities refer to the total amount of smelt landed in Region VIII from the waters of the Columbia River and its tributaries during each week ending Friday at noon. The prices stated opposite the quantities are the maximum prices commencing on Monday following the week during which the particular quantity was landed.

^{2/} Prices stated are for sales in bulk. For sales of boxed smelt, add one (\$0.01) cent per pound.

This amendment shall become effective January 22, 1945.

AMDT. 39 TO MPR-418 EFFECTIVE JANUARY 27

Fresh fluke fillets have been placed under price control with fixed cents-per-pound ceilings, the OPA announced January 22. Fresh round fluke--the whole fish--remains uncontrolled.

This action, effective January 27, 1945, was necessary because of the evasive practice of selling other species of flounder fillets (yellowtail and blackback) at uncontrolled fluke fillet prices. Skinless fillets of all variations of flounder are similar in appearance and it is difficult for consumers to distinguish between the fluke and other fillets, OPA said.

Further, fluke fillets, which normally have sold at the same level of prices received for other flounder fillets, developed inflationary prices, which, combined with the evasive practice of selling other species of flounder fillets as fluke fillets, presented a serious threat to compliance with flounder fillet prices. Recommendations for stabilizing the price of fluke fillets came from members of OPA's official Fish and Seafood Industry Advisory Committee, and from other members of the industry.

The maximum base prices established for processors of fluke fillets are similar to those already fixed for yellowtail and blackback fillets. These prices are 24½ cents per pound during the months of April-September, and 31½ cents per pound during the months of October-March. Retail prices will be announced shortly, OPA said.

Adjustments of the winter ceiling prices producers receive for whiting are included in the action. Winter ceilings on round whiting are increased from 2½ cents per pound to 3½ cents per pound. Also, the winter ceiling on dressed whiting at the producer level is increased from 5¼ cents per pound to 6¼ cents per pound.

These increases were required by the Stabilization Extension Act of 1944, which states that fishermen's prices for fresh fish must be fixed at prices no lower than the average 1942 prices. OPA said that producers' summer ceiling prices on whiting are being reexamined since there is a possibility that they too need an upward adjustment to meet the requirements of the law.

Excerpts from Amdt. 39 to MPR-418 follow:

2. In Section 22, Tables B, C, and D, Schedule No. 15 is amended and Schedule No. 66 is added to read as follows:

Sched. No.	Species	Item No.	Style of dressing	Size	Months	Price per pound		
						TABLE*		
15	Whiting (<i>Merluccius bilinearis</i>)	1	Round	All	Nov-Apr	5	6	7
		2	Dressed	"	"	8	9	10
		3	Regular fillets	"	"	18	20	21
		4	Butterfly fillets	"	"	18	19	20
		5	Dressed and skinned	"	"	17	18	19
		6	Dressed and scaled	"	"	18	19	20
66	Fluke (summer flounder) (<i>Paralichthys dentatus</i>)	1	Fillets	"	Apr-Sept	24½	26½	27½
		"	"	"	Oct-Mar	31½	34	35

*TABLE B--MAXIMUM PRICES FOR PRIMARY FISH SHIPPER SALES OF FRESH FISH AND SEAFOOD.

TABLE C--MAXIMUM PRICES FOR RETAILER OWNED COOPERATIVE SALES AND SALES BY WHOLESALERS OTHER THAN PRIMARY FISH SHIPPER WHOLESALERS TO OTHER WHOLESALERS OF FRESH FISH AND SEAFOOD.

TABLE D--MAXIMUM PRICES FOR CASH AND CARRY SALES OF FRESH FISH AND SEAFOOD.

AMDT. 40 TO MPR-418 EFFECTIVE JANUARY 30

The present fisherman's maximum price of 12 cents a pound for steelhead salmon has been increased to 15½ cents a pound, the Office of Price Administration announced on January 30. The increase of 3½ cents a pound is for the winter period of January through March.

Wholesalers' present ceilings have also been adjusted in line with the increase in the fisherman's price. An increase of about 6 cents a pound will result in the price consumers pay for steelhead salmon steaks--the most popular style of dressing in which this fish is sold at retail.

The adjustment of present maximum prices was necessary to comply with the Emergency Price Control Act of 1942, as amended, OPA said, which requires the agency to fix fish prices for the fishermen at a level not below the 1942 average. The ceiling of 12 cents a pound was the average price received for the Columbia River production of steelhead salmon during

the winter months of 1942. This basis for establishing a price was used because it was believed that the river production made up the greater part of the total winter production of the fish.

Fishermen in the coastal waters off Oregon and Washington, however, have submitted data to OPA showing that there is little steelhead production during the months of January through March on the Columbia River. During this period most of the fish are caught in the coastal waters.

The average 1942 winter price received for the coastal production was higher than the average price received for the Columbia River production during that period, OPA added.

Amdt. 40 to MPR-418--Fresh Fish and Seafood--became effective January 30. Excerpts follow:

Maximum Price Regulation No. 418 is amended in the following respects:

1. In section 22, Tables A, B, C, and D, Schedule No. 35 is amended to read as follows:

Sched. No.	Species	Item No.	Style of dressing	Size	Months	Price per pound TABLE			
						A	B	C	D
35	Salmon, steelhead (Pacific Coast)..... (<i>Salmo gairdnerii</i>)	1	Round	All	Jan-Mar	15 ¹ / ₂	18	19 ¹ / ₂	20 ¹ / ₂
		2	Dressed	"	"	-	23 ¹ / ₂	25 ¹ / ₂	26 ¹ / ₂
		3	Drawn	"	"	-	21	23	24
		4	Steaks	"	"	-	27 ¹ / ₂	29 ¹ / ₂	30 ¹ / ₂

RETAIL MARGINS FOR FRESH COLUMBIA RIVER SMELT ESTABLISHED

On January 19, OPA's Region VIII amended Order No. G-1 under MPR-507, Amdt. 5, as follows:

(a) Table A of section (d) is amended by adding Item No. 16 "Smelt" as follows:

Table A - Whole Fish Sold on Gross Weight and Prepared to the Customer's Order			
Item		I and II (cents per lb.)	III and IV (cents per lb.)
16	Smelt	\$0.07	\$0.05

(b) Paragraph (g) Definitions, is amended by adding at the end thereof the following:

(12) "Rex Sole" means the species *Errex zachirus* caught off the Pacific Coast.

(13) "Lobster" means the species *Panulirus interruptus* caught off the Pacific Coast.

(14) "Smelt" means the species *Eulachon* or *Thaleichthys pacificus* caught in the Columbia River and its tributaries located in Region VIII.

(c) This amendment shall become effective January 22, 1945.

Issued this 19th day of January 1945.

Frozen Fish Trade

JANUARY 1 FROZEN FISH HOLDINGS 13 PERCENT GREATER THAN YEAR PREVIOUS

Stocks of fishery products in domestic freezers on January 1 were 13 percent greater than January 1, 1944, but 13 percent below those of December 1, according to the Service's Current Fishery Statistics No. 163. Stocks totaled 111,956,000 pounds compared with 128,223,000 pounds on December 1 and 99,354,000 pounds on January 1, 1944. Substantial declines from January 1, 1944, were reported in the holdings of flounders, sea herring, scup, and lake herring and ciscoes, while important gains were made in stocks of cod and haddock fillets, halibut, mackerel, sablefish, salmon, and shrimp. Stocks of mild-cured salmon, totaling 1,798,000 pounds, were 44 percent greater than on January 1, 1944.

Holdings of Fishery Products in United States and Alaskan Cold-storage Plants

Item	Jan. 1 compared with				Dec. 1, 1944	Jan. 1, 1944	5-year average*
	Jan. 1, 1945	Dec. 1, 1944	Jan. 1, 1944	5-year average*	Pounds	Pounds	Pounds
Frozen fish and shellfish:							
Total holdings	111,956,000	-13	+13	+21	128,223,000	99,354,000	92,607,000
Important Items:							
Croakers	1,584,000	-19	+10	+17	1,949,000	1,440,000	1,359,000
Fillets:							
Cod	5,035,000	-11	+127	+112	5,685,000	2,214,000	2,376,000
Haddock	3,059,000	-17	+18	-37	3,689,000	2,599,000	4,852,000
Rosefish	2,691,000	-14	-1	+8	3,128,000	2,729,000	2,487,000
Flounders	1,121,000	-15	-19	+4	1,313,000	1,392,000	1,079,000
Halibut	10,428,000	-19	+55	+46	12,922,000	6,747,000	7,143,000
Herring, sea	1,572,000	+15	-53	-5	1,367,000	3,370,000	1,556,000
Mackerel	8,200,000	-20	+46	+26	10,372,000	5,667,000	6,566,000
Sablefish	3,526,000	-23	+51	+51	4,590,000	2,337,000	2,338,000
Salmon	11,368,000	-17	+29	+48	13,621,000	8,803,000	7,572,000
Scup (porgy)	1,533,000	-17	-16	+95	1,849,000	1,833,000	788,000
Whiting	8,720,000	-16	**	-6	10,366,000	8,712,000	9,230,000
Lake herring and cisco	2,331,000	+16	-52	-37	2,018,000	4,822,000	3,723,000
Whitefish	1,222,000	-26	+37	-22	1,650,000	891,000	1,570,000
Shrimp	10,101,000	-4	+20	+58	10,543,000	8,418,000	6,410,000
Cured fish:							
Herring, cured	8,627,000	-22	+18	-21	11,086,000	7,322,000	10,903,000
Salmon, mild-cured	1,798,000	-32	+44	-62	2,655,000	1,247,000	4,679,000

*Since the date for reporting holdings of fishery products was changed from the 15th to the first of the month beginning January 1, 1943, data included in the "5-year average" consist of a combination of figures for the two periods.

**An increase of less than one-half percent.

U. S. FREEZINGS IN DECEMBER 37 PERCENT LESS THAN 1943

Fishery products frozen in domestic freezers during December totaled 9,661,000 pounds, a decrease of 47 percent from November and 37 percent less than December 1943, according to the Service's Current Fishery Statistics No. 163. A shortage of freezer space reportedly was responsible for much of the decline. Important items which exhibited substantial gains over December 1943 were pollock fillets and mackerel. The three items frozen in greatest quantity were rosefish fillets, mackerel, and shrimp.

Freezings of Fishery Products in United States and Alaskan Cold-storage Plants

Item	December compared with				November 1944	December 1943	5-year average*
	December 1944	Nov. 1944	Dec. 1943	5-year average*	Pounds	Pounds	Pounds
Fish and shellfish:							
Total freezings	9,661,000	-47	-37	+5	18,104,000	15,297,000	9,232,000
Important Items:							
Croakers	41,000	+116	+356	+173	19,000	9,000	15,000
Fillets:							
Cod	313,000	-67	-21	+97	940,000	397,000	159,000
Haddock	153,000	-32	+168	-70	224,000	57,000	510,000
Pollock	482,000	-62	+84	-40	1,282,000	262,000	799,000
Rosefish	1,112,000	-30	-21	-1	1,579,000	1,410,000	1,114,000
Flounders	89,000	-13	-62	-44	102,000	232,000	160,000
Halibut	322,000	-58	-	-	768,000	-	-
Herring, sea	124,000	-2	-64	-4	127,000	344,000	129,000
Mackerel	813,000	-16	+87	+367	966,000	434,000	174,000
Sablefish	38,000	-89	-50	-55	340,000	34,000	8,000
Salmon	367,000	-78	-36	+42	1,534,000	575,000	259,000
Whiting	529,000	-71	-50	+14	1,850,000	1,057,000	466,000
Lake herring	430,000	-35	-84	-47	658,000	2,730,000	818,000
Shrimp	758,000	-72	-42	-15	2,756,000	1,302,000	896,000

*Since the date for reporting freezings of fishery products was changed from the 15th to the first of the month beginning January 1, 1943, data included in the "5-year average" consist of a combination of figures for the two periods.

NEW YORK COLD-STORAGE HOLDINGS DECREASE 16 PERCENT IN DECEMBER

In line with the seasonal decrease in fishing activities, with a resultant decline in production of fresh fish and shellfish, holdings in New York cold-storage warehouses declined 2,593,000 pounds in December, according to the Service's Market News office in that city.

Leading the withdrawals were groundfish fillets, followed by mackerel, shrimp, salmon, and whitefish. Practically every species stored showed declines with the exceptions of a few Southern species such as bluefish, king mackerel, and Spanish mackerel which are received in New York in large quantities during the winter months. Although some other minor species showed small increases, these gains were not large enough to counterbalance the large withdrawals. Despite a 16 percent drop in holdings during December, however, stocks were still 22 percent larger than those on hand at the end of December 1943.

New York Cold-storage Holdings

Item	Jan. 1, 1945	Jan. 1, 1945 compared with		Dec. 1, 1944	Dec. 31, 1943
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	14,359,000	-16	+22	16,952,000	14,794,000
<u>Important Items:</u>					
Butterfish	277,000	-24	-53	365,000	595,000
Fillets:					
Cod	1,357,000	-26	+	1,838,000	72,000
Flounder	114,000	-34	+338	174,000	26,000
Haddock	596,000	-44	+	1,073,000	44,000
Flounder, fluke, etc.	206,000	-32	-10	302,000	230,000
Halibut	904,000	+5	+	865,000	51,000
Mackerel	1,133,000	-15	+97	1,327,000	574,000
Sablefish	819,000	-8	+28	886,000	642,000
Salmon, king (chinook)	1,469,000	-10	+59	1,631,000	926,000
Scup (porgy)	318,000	-13	-4	364,000	331,000
Striped bass	199,000	-16	+84	238,000	52,000
Whiting	291,000	+1	-50	299,000	587,000
Unclassified, salt-water	1,054,000	-18	+1	1,286,000	1,040,000
Whitefish	333,000	-32	-41	491,000	561,000
Scallops	333,000	-11	+283	373,000	87,000
Shrimp	2,352,000	-7	+22	2,527,000	1,927,000

COLD-STORAGE HOLDINGS AT BOSTON DECREASE 22 PERCENT IN DECEMBER

On December 27, there were 12,670,000 pounds of frozen fish in Boston cold-storage warehouses, a decrease of 22 percent from November 29 but an increase of 9 percent from December 29, 1943, according to the Service's Fishery Market News office in that city. All important items decreased from November 29, particularly cod, haddock, and mackerel fillets, whole mackerel, and smelt.

Fresh fish landings in the entire New England area fell off sharply in December due principally to adverse weather conditions and the Holiday season. Boston landings alone dropped nearly 2,000,000 pounds compared to November's arrivals of over 9 million pounds at the Boston Fish Pier. The inshore fleet, comprised mainly of smaller boats, was noticeably inactive during December.

Whiting holdings in 14 plants in Maine and Massachusetts showed a combined total of 4,746,000 pounds, a drop of 47 percent compared to 8,047,000 pounds held on November 25. These holdings consist mainly of dressed and H&G fillets.

Boston Cold-storage Holdings

Item	Dec. 27, 1944	Dec. 27 compared with		Nov. 29, 1944	Dec. 29, 1943
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	12,670,000	-22	+9	16,219,000	11,544,000
<u>Important Items:</u>					
Fillets:					
Cod	1,486,000	-20	-70	1,869,000	4,890,000
Flounder	523,000	-8	+261	570,000	145,000
Haddock	786,000	-23	+431	1,027,000	148,000
Mackerel	716,000	-50	+763	1,445,000	83,000
Pollock	433,000	-16	+218	518,000	136,000
Rosefish	265,000	-26	-28	360,000	368,000
Mackerel	3,052,000	-14	+29	3,530,000	2,370,000
Smelt	72,000	-79	-73	339,000	267,000
Scallops	343,000	-11	+269	384,000	93,000
Shrimp	391,000	-3	-41	403,000	664,000

CHICAGO COLD-STORAGE HOLDINGS DROP SLIGHTLY IN DECEMBER

Cold-storage holdings on December 28 were 10 percent less than those of November 30, and 16 percent less than the holdings a year previous, according to the Service's Market News office in Chicago.

Unfavorable weather conditions prevailed on the lakes during most of December, and as a result, receipts of fresh fish were very light. Because of this, unusually heavy withdrawals of holdings of several species were made, with lake trout and whitefish showing the greatest decrease among fresh-water items. Pickerel, yellow perch, and yellow pike moved out in quantities greater than normal.

Heavy receipts of frozen halibut during the last week in December brought these holdings well above those of November 30.

Mackerel and whiting holdings were less than those of a month previous, and showed a great decrease as compared with December 1943. These items were both affected by a recent revision of OPA's retail ceiling prices.

Item	Chicago Cold-storage Holdings			
	Dec. 28, 1944	Dec. 28, 1944 compared with Nov. 30, 1944	Dec. 30, 1943	Nov. 30, 1944
	Pounds	Percent	Percent	Pounds
Total fish and shellfish	6,655,000	-10	-16	7,396,000
<u>Important Items:</u>				
Blue pike and sauger	323,000	-26	-75	438,000
Chubs	450,000	+9	+54	414,000
Lake herring	348,000	+8	-44	322,000
Lake trout	256,000	-47	-17	481,000
Pickerel	82,000	-36	+6	128,000
Whitefish	478,000	-38	+335	770,000
Yellow perch	132,000	-29	-51	187,000
Yellow pike	120,000	-22	-32	153,000
<u>Filletts:</u>				
Cod	535,000	-7	+88	576,000
Haddock	104,000	-11	-10	117,000
Rosefish	307,000	-28	+80	427,000
Halibut	600,000	+54	-8	390,000
Mackerel	130,000	-9	-53	143,000
Sablefish	245,000	+39	+155	176,000
Salmon	327,000	+7	+18	305,000
Whiting	204,000	-15	-40	240,000
Shrimp	1,149,000	-6	+3	1,217,000

JANUARY 1 CANADIAN FROZEN FISH STOCKS 8 PERCENT LESS THAN YEAR EARLIER

Stocks of frozen fresh fish in Canadian cold-storage plants on January 1 totaled 28,056,000 pounds and consisted largely of cod, salmon, sea herring, and halibut, according to information supplied by the Dominion Bureau of Statistics. Compared with December 1, 1944, holdings were down 23 percent, with substantial declines exhibited in all important items.

Item	Canadian Cold-storage Holdings			
	Jan. 1, 1945	January 1 compared with Dec. 1, 1944	Jan. 1, 1944	Dec. 1, 1944
	Pounds	Percent	Percent	Pounds
Total holdings	28,056,000	-23	-8	36,363,000
<u>Important Items:</u>				
<u>Frozen fresh fish</u>				
Cod:				
Whole	2,707,000	-17	-14	3,243,000
Filletts	2,889,000	-5	-21	3,057,000
Salmon	5,809,000	-32	-30	8,537,000
Sea herring	5,035,000	-24	-8	6,595,000
Halibut	4,415,000	-17	+76	5,322,000
Mackerel	1,354,000	-27	+32	1,852,000
Whitefish	848,000	-27	+103	1,160,000
Tullibee	434,000	-23	+113	565,000
Pickerel	462,000	-33	-18	694,000
<u>Frozen smoked fish</u>				
Total holdings	2,022,000	+12	+24	1,798,000
<u>Important Items:</u>				
Filletts; cod, haddock, etc.	889,000	+*	+60	887,000
Sea herring kippers	821,000	+20	-11	685,000

*An increase of less than one-half percent.

CANADIAN FRESH FISH FREEZINGS DOWN 22 PERCENT IN DECEMBER

Freezings of fishery products by Canadian cold-storage plants totaled 3,200,000 pounds during December, according to information furnished by the Dominion Bureau of Statistics. This was a decline of 22 percent from November and 19 percent below December 1943. Freezings of cod, totaling 1,184,000 pounds, accounted for 37 percent of the production.

Freezings of Fishery Products in Canadian Cold-storage Plants

Item	December 1944	December compared with Nov. 1944	December compared with Dec. 1943	November 1944	December 1943
	Pounds	Percent	Percent	Pounds	Pounds
<u>Frozen fresh fish</u>					
Total freezings	3,200,000	-22	-19	4,076,000	3,968,000
<u>Important Items:</u>					
<u>Cod:</u>					
Whole	147,000	-27	-52	200,000	308,000
Filletts	1,037,000	-22	-10	1,327,000	1,150,000
Haddock filletts	196,000	-1	+9	198,000	180,000
Salmon	217,000	-56	+12	491,000	194,000
Halibut	195,000	+13	+124	172,000	87,000
Sea herring	326,000	-13	-70	374,000	1,077,000
Mackerel	51,000	-85	+538	345,000	8,000
Pickeral	90,000	-67	+45	276,000	62,000
<u>Frozen smoked fish</u>					
Total freezings	1,037,000	-1	+18	1,046,000	876,000
<u>Important Items:</u>					
Filletts; cod, haddock, etc.	504,000	-22	+3	642,000	490,000
Sea herring kippers	372,000	+33	+46	280,000	255,000

WFA EXTENDS FREEZER SPACE ALLOCATIONS

On January 3, the War Food Administration added four new locations to its list of cities or towns in which it may issue allocation authorization for public freezer space to the Armed Forces. The entire list from WFO-116, as amended, is as follows:

Baltimore, Md.	Detroit, Mich.	Milwaukee, Wis.	Pittsburgh, Pa.
Buffalo, N. Y.	Duluth, Minn.	Minneapolis, Minn.	St. Joseph, Mo.
Chicago, Ill.	Fort Worth, Tex.	Nashville, Tenn.	St. Louis, Mo.
Cincinnati, Ohio	Georgetown, Del.	National Stock Yards, Ill.	St. Paul, Minn.
Dallas, Tex.	Kansas City, Kans.	Omaha, Nebr.	Salt Lake City, Utah
Denver, Colo.	Kansas City, Mo.	Philadelphia, Pa.	Springfield, Mo.

Canned and Cured Fish Trade

BOTH CALIFORNIA TUNA AND MACKEREL PACKS FOR YEAR 1944 ABOVE 1943 TOTALS

The pack of tuna by California canners during December was 5 percent below November and 2 percent less than December 1943, according to information released by the California Division of Fish and Game. The tuna pack totaled 174,767 standard cases compared with 184,848 cases packed during November and 178,623 cases canned during December 1943. The pack for the twelve months of 1944, which totaled 2,918,311 cases, exceeded the 1943 production by 20 percent. The largest percentage of increase for the year was made in the pack of bluefin tuna which was more than double the 1943 pack. Yellowfin tuna was up 20 percent and tuna flakes increased 40 percent. Packs of bonito and yellowtail tuna were considerably smaller than in 1943.

The production of canned mackerel during December, amounting to 152,145 standard cases, was 19 percent below November but a gain of 35 percent over December 1943. The year's total for 1944--986,192 cases--was 19 percent greater than that for 1943.

California Pack of Tuna and Mackerel--Standard Cases*

Item	December	November	December	Twelve mos. ending with December--	
	1944	1944	1943	1944	1943
	Cases	Cases	Cases	Cases	Cases
Tuna:					
Albacore	11,543	50,101	171	445,938	445,421
Bonito	2,387	978	279	8,496	35,955
Bluefin	732	973	6,737	367,736	170,019
Striped	29,787	41,829	31,842	362,917	385,213
Yellowfin	91,188	53,400	110,467	908,870	753,841
Yellowtail	237	197	62	19,867	58,303
Flakes	38,893	37,370	28,556	789,122	561,880
Tonno style	-	-	509	15,365	17,913
Total	174,767	184,848	178,623	2,918,311	2,426,545
Mackerel	152,145	188,727	113,064	986,192	831,457

*Standard cases of tuna represent cases of 48 7-ounce cans, while those of mackerel represent cases of 48 1-pound cans.

DECEMBER'S PILCHARD PACK RAISES MARGIN OVER LAST SEASON TO 534,000 CASES

Through December of the 1944-45 season California pilchard packing plants continued to increase their margin over the 1943-44 season, reports from the California Sardine Products Institute and the California Division of Fish and Game indicate. Although the month's total was 16 percent less than that of November, it was 34 percent larger than that of December 1943. The pack for the season was larger by 27 percent, or 534,000 cases, than the 1943-44 season through December.

Production of meal and oil led 1943-44 production by 23 and 34 percent, respectively, for the part of the season completed December 31.

California Sardine Landings, Canned Pack and Byproducts

Item	Unit	M O N T H			S E A S O N	
		1944	1944	1943	1944-45	1943-44
		Dec. 3-30	Oct. 29-Dec. 2	Dec. 5-Jan. 1	Aug. 1-Dec. 30	Aug. 1-Jan. 1
Landings	Tons	74,196	91,099	57,727	484,735	390,215
	1 lb. ovals-48 per case	193,159	287,405	189,262	1,185,899	1,110,699
	1 lb. tails-48 per case	408,481	443,193	262,973	1,717,259	1,262,043
	1 lb. fillet-48 per case	384	-	-	4,327	17,106
Canned	1 lb. round-96 per case	13,678	12,850	10,367	51,688	72,285
	5 oz.-100 per case	-	-	-	-	6,970
	Unclassified	13,646	9,987	6,363	84,813	49,826
	TOTAL, Std. 1 lb.-48 per case	629,156	753,435	468,965	3,041,823	2,507,946
Meal	Tons	December 11,593	November 13,815	December 11,994	Aug. 1-Dec. 31 74,711	Aug. 1-Dec. 31 60,628
Oil	Gallons	1,749,234	3,040,705	1,747,852	16,735,172	12,526,292

DECEMBER SHRIMP PACK 4 PERCENT LARGER THAN THAT OF DECEMBER 1943

The pack of canned shrimp by Gulf Coast canneries operating under Food and Drug Administration inspection, during the four weeks ending December 30 was 4 percent larger than that during the corresponding period in 1943, according to the Service's New Orleans Market News office. As usual, this period was considerably less active than October and November.

Although the season's pack from July 1 to December 30 was 2,500 cases larger than the pack for the first half of the 1943-44 season, it was 36 percent below the average six-month pack for the preceding five seasons.

Wet and Dry Pack Shrimp in all Sizes in Tin and Glass--Standard Cases*

	M O N T H		S E A S O N		5-yr.-average
	1944	1943	1944	1943	
Dec. 3-Dec. 30	Oct. 29-Dec. 2	Dec. 5-Jan. 1	July 1-Dec. 30	July 1-Jan. 1	July 1-Dec. 31
17,137	61,867	16,451	381,820	379,326	597,729

* All figures on basis of new standard case--48 No. 1 cans with 7 oz. per can in the wet pack and 6 oz. per can in the dry pack.

WFA RAISES SET-ASIDE QUOTAS ON CANNED FISH

Packers of California pilchards, Pacific mackerel, and Pacific horse mackerel, because of increased requirements of the Armed Services, were ordered by the WFA to increase their quotas to be reserved for delivery to Government agencies. These quotas were raised, in Amdt. 7 to WFO-44, from 55 percent to 100 percent of each canner's pack. Percentages on other classes of canned fish remain unchanged by the action, which became effective January 14. The provisions of the amendment affect only fish packed on and after the effective date.

Amdt. 7 also extended the effective period of WFO-44 from February 28, 1945, to March 31, 1945, for all classes of fish included in the order.

WFA REQUESTS AMENDMENT OF CANNED FISH CONTRACTS

To adjust existing contracts for purchase of canned pilchards, Pacific mackerel and horse mackerel, sea herring, Maine sardines, and Atlantic mackerel to the recent change made in the expiration date of War Food Order 44, the WFA on January 19 and 20 issued amendments to Announcements Awd-26, 89, and 135 and FSC-1861. These requested canners to sign and return to the WFA, amendments to their sales contracts which would extend the ending date of the 1944-45 pack period to March 31, 1945.

CANNED COD AND HADDOCK FLAKE PRICES RAISED

To enable canners of cod and haddock flakes to process these items for the Navy during the off season period of production, the OPA on January 8 increased the price of these items by 70 cents per dozen 14-ounce cans.

The amount of the increase, less than 6 cents per can, exactly reflects the increased cost of the raw material during the winter season of higher fresh fish prices, OPA said.

The increased ceilings apply only to sales of this pack made on or before April 1, 1945, to the Navy Department. The Navy's urgent need for these products, with no available stock on hand, necessitated this action.

Amdt. 1 to MPR-537--Canned Fish--became effective January 11. Excerpts follow:

Section 1 (e) is added to read as follows:

(e) Notwithstanding the provisions of paragraph (a), the prices set forth below are maximum prices f. o. b. the shipping point nearest the canner's warehouse for sales to the Bureau of Supplies and Accounts of the United

States Navy Department at Washington, D. C., of the items listed below provided such items are canned after January 10, 1945, and are delivered to the said Bureau on or before April 1, 1945. Such prices are subject to the discounts provided by paragraph (d).

Container size	Description	Maximum price per case of 24 cans
No. 300 x 407	Canned haddock fish flakes.....	\$8.00
No. 300 x 407	Canned codfish flakes.....	8.00
No. 300 x 407	Canned haddock and codfish flakes.....	8.00

ICELAND MATJES HERRING PRICES INCREASED BY OPA

Importers' maximum selling prices to jobbers of Icelandic Matjes herring of the 1944-45 pack have been increased by \$3.75 a barrel (250 pounds), with no resulting increase to consumers, the OPA announced on January 9. The increase will be absorbed mainly by the wholesaler or jobber, with a slight absorption by the retailer, OPA said.

This action was made necessary because importers will have to purchase their herring from the United Nations Relief and Rehabilitation Administration. The relief agency, under its arrangements with the Government of Iceland for the contribution of the herring for relief use had accepted the entire pack of 1944-45 Icelandic Matjes herring at a value per barrel higher than our importers could afford to pay and resell at a profit under the ceiling prices provided for domestic sale. At the time when the contribution was accepted, it appeared that the herring would be required in the winter of 1944-45 for relief feeding in liberated Europe. The present military and transport situation makes it impossible to use the herring for relief. Therefore, it was released in the U. S. UNRRA has agreed to sell 12,000 barrels of Matjes herring to domestic importers. To enable importers to handle this item it was necessary to increase their maximum prices.

A ceiling of \$37.00 per barrel has been established for sales of this herring of the 1944-45 pack by importers to jobbers or wholesalers. This will allow the importer a small margin of profit--about \$2 a barrel as against a normal margin of approximately \$3 a barrel. The maximum established for service and delivery sales of this item by wholesalers is approximately \$41.50 per barrel. This constitutes an increase in the wholesalers' maximum price, but his mark-up, on a percentage basis, is reduced from 19 percent to approximately 11 1/2 percent. The wholesalers' dollar-and-cent profit margin for service and delivery sales is reduced by approximately \$2.07 per barrel. The retailers' maximum prices are unchanged. They are not permitted to recalculate their prices, OPA said.

The effect of this action on Group 1 and 2 stores, which handle the bulk of Icelandic Matjes herring, will be that they will be required to absorb \$1.68 per barrel of the increase.

Before taking this action, OPA conferred with representative importers and wholesalers of Icelandic herring, and the prices fixed on January 9 for the 1944-45 pack are substantially the prices to which the industry agreed.

Amdt. 1 to MFR-512--Iceland Herring--became effective January 13, 1945. Excerpts follow:

3. Following section 3 a new section 3a is inserted to read as follows:

SEC. 3a. Where this regulation applies. The provisions of this regulation shall apply to the forty-eight states of the United States and the District of Columbia.

4. Section 4 is amended to read as follows:

SEC. 4. Maximum prices for sales of Iceland herring by importers. (a) The maximum prices for sales of Iceland herring by an importer are set out below in Table A and Table B. The prices in Table A apply to sales of Iceland herring other than sales of Matjes herring of the 1944-45 pack made before October 30, 1945. The prices in Table B apply to sales of Matjes herring of the 1944-45 pack made before October 30, 1945. No sales of Iceland herring may be made by importers at Table B prices after October 30, 1945. Except for service and delivery sales to retailers or purveyors of meals the prices are f. o. b. the seller's warehouse. The prices for service and delivery sales are prices for sales to retailers and purveyors of meals on a delivered basis to the customer's usual receiving point. The maximum prices are gross prices and the seller shall deduct therefrom his customary allowances, discounts and differentials to purchasers of different classes. An importer may add the actual cost of transportation from the port of entry to the importer's warehouse where his warehouse is not at that port. In no case may the rate exceed the carload rail freight rate.

TABLE A--ICELAND HERRING

Sales to persons other than purveyors of meals or retailers	Sales to retailers or purveyors of meals	
	Service and delivery	Cash and carry
Matjes herring:		
(a) Barrels--containing 200 lbs. of herring, \$37.00.....	\$37.75	\$38.25
(b) Half-barrels--containing 100 lbs. of herring, \$17.75.....	20.00	19.25
Headless herring:		
(a) Barrels--containing 200 lbs. of herring, \$31.50.....	35.00	34.50
(b) Half-barrels--containing 100 lbs. of herring, \$15.75.....	19.00	18.25

TABLE B--MATJES HERRING OF THE 1944-45 PACK

Sales to persons other than purveyors of meals or retailers	Sales to retailers or purveyors of meals	
	Service and delivery	Cash and carry
Matjes herring:		
(a) Barrels--containing 200 lbs. of herring, \$37.00.....	\$40.00	\$39.00
(b) Half-barrels--containing 100 lbs. of herring, \$19.50.....	21.00	20.50

(b) The notification provisions in section 5 do not apply to deliveries of Matjes herring of the 1944-45 pack made before October 30, 1945.

(c) Containers. For container sizes not listed in paragraph (a) the price shall be a price determined by the Office of Price Administration. Such determination shall be made upon written request addressed to the Office of Price Administration, Washington, D. C. and accompanied by a sworn statement showing costs and usual differentials.

5. A new section 5a is inserted to read as follows:

Sec. 5a. Maximum prices for sales of Iceland herring by wholesalers to retailers, commercial, industrial and institutional users--(a) General instructions. A wholesaler's maximum price for sales of each "item" of Iceland herring (except sales of Matjes herring of the 1944-45 pack made before October 30, 1945) is the result obtained by multiplying his "net cost" by the mark-up applicable to the type of sale. Matjes herring and headless herring shall be considered separate items, and separate ceiling prices shall be figured for each container size. The wholesaler's maximum price is computed as follows:

He must first find the "net cost" of the unit in which he receives delivery of the item (i. e. barrels, one-half barrels, etc.). His maximum price for that item is obtained by multiplying his "net cost" by the appropriate mark-up figure set out in paragraph (c) of this section. Thus if he receives Matjes herring in one-half barrels, he must multiply his net cost of the one-half barrels by the appropriate mark-up figure and the result is his maximum price for sales of the item received and sold in one-half barrels. If he also receives Matjes herring in barrels, he must calculate the maximum price for sales of the item received in those units, etc. (1) All calculations of maximum prices resulting in fractions of cents must be rounded out to the nearest cent; (2) If the wholesaler sells an amount less than the unit in which he received delivery his maximum price must be reduced proportionately rounding any fractions to the nearest higher cent.

(b) Net cost. The wholesaler's "net cost" must be based upon the most recent delivery to him of the item prior to January 13, 1945. His net cost is the amount he paid his supplier for that delivery less all discounts except the discount for prompt payment plus all transportation charges he paid except local trucking, hauling and handling charges. (1) The wholesaler's net cost must be calculated on purchases of a customary quantity from a customary type of supplier delivered to his customary receiving point by a customary means of delivery. (2) The seller must not calculate his net cost on a purchase made at a price higher than his supplier's maximum price.

(c) Wholesaler's mark-ups for different class of sales. The mark-up which applies in any particular type of sale depends upon the kind of service performed by the wholesaler in that particular sale. (1) Cash and carry sales. Cash and carry sales are sales of Iceland herring by wholesaler where the wholesaler does not deliver to the purchaser's place of business. The mark-up for this class of sale is 1.13. (2) Service and delivery sales. Service and delivery sales are sales of Iceland herring by a wholesaler where the wholesaler delivers such Iceland herring in his own motor truck or wagon or in a motor truck or wagon used solely for his own delivery from his established place of business to the place of business of his customer. The mark-up for this class of sale is 1.19. (d) Invoices. The wholesaler must write his net cost per unit either on his invoice or other record of the price he paid for the item, or on a separate slip of paper attached to that invoice or other

received and sold in one-half barrels. If he also receives Matjes herring in barrels, he must calculate the maximum price for sales of the item received in those units, etc. (1) All calculations of maximum prices resulting in fractions of cents must be rounded out to the nearest cent; (2) If the wholesaler sells an amount less than the unit in which he received delivery his maximum price must be reduced proportionately rounding any fractions to the nearest higher cent.

(c) Wholesaler's mark-ups for different class of sales. The mark-up which applies in any particular type of sale depends upon the kind of service performed by the wholesaler in that particular sale. (1) Cash and carry sales. Cash and carry sales are sales of Iceland herring by wholesaler where the wholesaler does not deliver to the purchaser's place of business. The mark-up for this class of sale is 1.13. (2) Service and delivery sales. Service and delivery sales are sales of Iceland herring by a wholesaler where the wholesaler delivers such Iceland herring in his own motor truck or wagon or in a motor truck or wagon used solely for his own delivery from his established place of business to the place of business of his customer. The mark-up for this class of sale is 1.19. (d) Invoices. The wholesaler must write his net cost per unit either on his invoice or other record of the price he paid for the item, or on a separate slip of paper attached to that invoice or other

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record. The wholesaler must keep separate, or mark or tag plainly, all invoices or records showing the net cost of the unit in which he received delivery and which he used in figuring his maximum prices. The invoices and records he used in figuring his maximum prices are his means of proving that his maximum prices are right.

(e) *Matjes herring of the 1944-45 pack.* The wholesaler's maximum price for sales to retailers, commercial, industrial and institutional users of Matjes herring of the 1944-45 pack made before October 30, 1945, is the sum of his net cost determined in accordance with the rules set out in paragraph (b) of this section plus the appropriate dollar-and-cents mark-up provided in the following

Table. His net cost must be based on the first delivery to him of Matjes herring of the 1944-45 pack. His net cost must be calculated on purchases of a customary quantity from a customary type of supplier delivered to his customary receiving point by a customary means of delivery. Subsection (d) is also applicable to sales of this item.

(1) *Mark-ups.*

	Service and delivery sales	Cash and carry sales
Matjes herring of 1944-45 pack:		
(a) Barrels containing 200 lbs. of herring.....	\$1.25	\$2.00
(b) Half-barrels containing 100 lbs. of herring.....	2.25	1.50

(2) No sales by wholesalers of Iceland herring may be made at the prices fixed in accordance with this paragraph (e) after October 30, 1945.

6. In section 13 the following definition is inserted between the definition of "Matjes herring" and the definition of "purveyor of meals": "Matjes herring of the 1944-45 pack" means Matjes herring which was imported into the Continental United States between the dates January 1, 1945 and October 30, 1945.

ICELAND HERRING REMOVED FROM MPR-421

Amdt. 19 to MPR-421 removes from that regulation the following items of "processed fish": Iceland headless herring, Matjes herring, and Matjes herring of the 1944-45 pack. A recent amendment to MPR-512, provides wholesalers with a pricing method for these items.

FOOD PROCESSING MACHINERY PROCUREMENT EASED

Food processing machinery may be made available now to any person on an unrated order, the WPB announced January 6. An amendment to the food processing machinery order, L-292, removed the restriction requiring an AA-5 or better rating for purchase of such equipment.

However, priorities assistance, if required, will be available for the procurement of equipment necessary to the maintenance of existing operations and the expediting of WPA programs. In these instances, applications for preference ratings will be filed with the nearest WPB field office on Form WPB-541 or, where construction is involved, on Form WPB-617. The use of special application Forms WPB-576, WPB-748, and WPB-3155 has been discontinued.

Concurrent with the amendment to Order L-292, Orders P-115, controlling the distribution of canning machinery, and P-118, controlling the distribution of dairy and poultry machinery, have been revoked, inasmuch as the main provisions of these orders are included in the amended L-292.

The elimination of the rating floor from the sale of food processing machinery does not in any way affect production quotas established for this equipment, WPB officials explained. Schedule III-A, Production Quotas for Canning Machinery and Equipment, was amended to bring it into conformity with the amended L-292.

WPB REVISES METAL CAN ORDER JANUARY 1

Restrictions on the use of metal for cans and closures for glass containers have been changed to permit use of steel instead of substitute materials, many of which are now more critical than steel, the WPB said on January 1.

The metal can order, M-81, has been changed so that packers may use untinned steel without quota restrictions, since supplies of sheet steel are now more adequate than those of paper and several other packaging materials. Virtually all of the previous restrictions on tin for packaging purposes are retained.

The use of metal instead of paper and other materials for containers for many products is expected to save manpower, WPB said. In many instances, less labor is required to make and fill metal containers than is required for comparable substitute packages, WPB said.

Production of cans for military requirements and for the food pack is assured by a clause in M-81, which states that can manufacturers must supply these needs before producing other types of cans, WPB said.

In connection with this change in restrictions, WFB reminded packers that metal containers, to replace substitute packages, may not be available for some time. WFB also cautioned packers that because of the uncertain situation in the materials field, there is no guarantee that steel will continue to be available for these containers.

A study of M-81, as amended January 1, reveals that it affects the production of fishery products as follows:

1. Leaves all hermetically-sealed fishery products in Order M-81 that were there before. In addition, it permits packing of codfish cakes in 10-oz. cans up to 50 percent of 1941 pack, but limits can material to 0.25 tin for sides and CTB for ends.
2. Metal containers made only of blackplate or waste are not restricted by Order M-81 except that--
 - (a) Animal food is not to be packed in these or any cans.
 - (b) Such cans when to be used by the military or for packing drugs, medicinals, and biologicals are to take preference in manufacture.

This provision is important since refrigerated fishery products use blackplate containers.

3. The small user provision of the Order has been eased to permit the use of 250 base boxes of timplat instead of 25 base boxes as in the former order. (250 base boxes are equivalent to about 2600 cases of 48 No. 300 cans or 3,000 cases of 48 No. 1 picnic cans). This provision permits any person whose total use of cans during the year is less than 250 base boxes to purchase or use cans without limitation as to packing quota. However, if he packs products listed in Schedule A he must conform to can sizes and materials listed in Schedule A.
4. If a packer does not have a quota for a product listed in Schedule A, he may apply for and receive a quota from WFB.

Fishery items listed in M-81 follow:

Product (1)	Packing quota (2)	Can sizes (3)	Can materials	
			Body (4)	Ends (5)
<i>Vegetables and vegetable products—Continued</i>				
30. Soups: Limited to the below-listed kinds of seasonal and non-seasonal soups containing in the case of all soups except mushroom and bean, no less than the specified percentage, by weight, of dry solids from dairy products in any form, poultry or poultry products in any form, fresh, brined, or frozen meats, fish, vegetables, and other products of the kinds listed in the Schedule. Mushroom or bean soups shall contain no less than the specified percentage of salt-free solids.				
a. Seasonal soups: Kinds, minimum solids: Asparagus, pea, spinach, tomato 7% dry solids; mushroom 10 1/4% salt-free solids.	Unlimited	1 picnic	1.25 tin	0.50 tin
b. Non-seasonal soups: Kinds, minimum solids: Chicken, chicken gumbo, chicken noodle, gumbo creole, consommé, bouillon and chicken broth, 8% dry solids. Clam or fish chowder, turtle, 8% dry solids. Scotch broth, vegetable, vegetable-vegetarian, pepper pot, oxtail, mock turtle, country style chicken and corn chowder, 10% dry solids. Beef and vegetable beef, 12% dry solids. Dried bean, 22% salt-free solids.	100% 1942. Products are interchangeable.	1 picnic	1.25 tin	0.50 tin
<i>Fish and shellfish</i>				
(Processed, and in hermetically sealed cans)				
30. Clams, soft, hard or razor	Unlimited	1/4 flat (307 x 300.25) or (307 x 301.25), 1 picnic (311 x 400), 1 tall (301 x 411), 2 (307 x 400), 10 (308 x 700)	0.50 tin	0.50 tin
31. Crabmeat	Unlimited	1/4 flat (307 x 301.25)	0.50 tin	0.50 tin
32. Fishflakes. Dried fishflakes not to be packed.	Unlimited	300 (300 x 407), 2 (307 x 400)	0.50 tin	0.50 tin
33. Ground fish, containing no filler	Unlimited	300 (300 x 407)	0.50 tin	0.50 tin
34. Fish livers and fish liver oils	Unlimited	5 gal	1.25 tin	1.25 tin
35. Fish roe	Unlimited	300 (300 x 407), 1/4 oval (513 x 307 x 330)	0.50 tin	0.50 tin
36. Herring, Atlantic Sea, by whatever name known, including sardines	Unlimited	1/4 drawn (300.5 x 404 x 914.5), 1/4 drawn (304 x 308 x 168), 1/4 three piece (308 x 413 x 112), 300 (300 x 407)	1.25 tin	1.25 tin
<i>Oblong or round cans:</i>				
Packed in brine			0.50 tin	0.50 tin
Packed in oil			0.50 tin	0.50 tin
Packed in mustard or tomato sauce			1.25 tin	0.50 tin
<i>Dry cans:</i>				
Packed in brine			1.25 tin	1.25 tin
Packed in oil			1.25 tin	1.25 tin
Packed in mustard or tomato sauce			1.25 tin	1.25 tin
37. Herring, Pacific Sea	Unlimited	1 tall (301 x 411)	1.25 tin	1.25 tin
<i>Round cans:</i>				
Packed in brine			0.50 tin	0.50 tin
Packed in oil			0.50 tin	0.50 tin
Packed in mustard or tomato sauce			0.50 tin	0.50 tin
38. Herring, river including alewives	Unlimited	300 (300 x 407), 2 (307 x 400)	0.50 tin	0.50 tin
39. Mackerel	Unlimited	300 (300 x 407)	0.50 tin	0.50 tin
40. Menhaden	Unlimited	300 (300 x 407)	0.50 tin	0.50 tin
41. Mullet	Unlimited	300 (300 x 407)	0.50 tin	0.50 tin
42. Mussels	Unlimited	1 picnic (311 x 400), 2 (307 x 400), 10 (308 x 700)	0.50 tin	0.50 tin

Product (1)	Packing quota (2)	Can sizes (3)	Can materials	
			Body (4)	Ends (5)
Fish and shellfish—Continued (Processed, and hermetically sealed cans)				
83. Oysters. No. 1 picnic cans shall contain not less than 7½ ounces of oysters by cut-out drained weight; No. 2 cans 14 ounces, and other permitted size cans shall contain a fill correspondingly proportionate to the No. 1 picnic can.	Unlimited	1 picnic (211 x 400), 1 tall (301 x 411), 2 (307 x 400).	0.50 tin	0.80 tin.
84. Filehards, by whatever name known including sardines	Unlimited	82 short (211 x 300), 14 oblong (304 x 388 x 104) or (308 x 510 x 104), 300 (300 x 407), 1 oval (607 x 408 x 108).		
Round cans:				
Packed in brine			0.50 tin	0.50 tin.
Packed in oil			0.50 tin	0.50 tin.
Packed in mustard or tomato sauce			0.50 tin	0.50 tin.
Oval cans:				
Packed in brine			1.25 tin	1.25 tin.
Packed in oil			1.25 tin	1.25 tin.
Packed in mustard or tomato sauce			1.25 tin	1.25 tin.
Oblong cans:				
Packed in brine			1.50 tin	1.25 tin.
Packed in oil			1.50 tin	1.25 tin.
Packed in mustard or tomato sauce			1.50 tin	1.25 tin.
85. Salmon	Unlimited	14 flat (307 x 300.25) or (307 x 201.25), 1 flat (401 x 210.5) or (401 x 211), 1 tall (301 x 411).	1.50 tin	0.50 tin.
86. Shad	Unlimited	300 (300 x 407)	0.50 tin	0.80 tin.
87. Shrimp	Unlimited	1 picnic (211 x 400), 5 (303 x 410).	0.50 tin	0.50 tin.
88. Squid	Unlimited	300 (300 x 407)	0.50 tin	0.80 tin.
89. Tuna, bonito or yellowtail	Unlimited	14 tuna (307 x 113), 1 tuna (401 x 205.5) 4 lb. tuna (603 x 408).	0.50 tin	0.50 tin.
90. Turtle	Unlimited	300 (300 x 407)	0.50 tin	0.80 tin.
Miscellaneous food products—Continued				
89. Liquid edible oils, including only animal, vegetable, olive, fish and other marine animal, and edible blends of such oils.	Unlimited. 125% 1944 tonnage packed in 1 gal. or larger size can ^a and glass.	5 gal. 1 gal.	1.25 tin 0.50 tin	1.25 tin. 0.50 tin.
90. Shrimp, fresh cooked Alaska only (refrigerated shipment)	Unlimited	10	1.35 tin	0.80 tin.
102. Cod fish cakes	80% 1941	10 ea.	0.35 tin	CTB.

Byproducts Trade

WFA TERMINATES ORDER REQUIRING REPORTS ON USE OF FATS AND OILS

Effective January 11, the WFA terminated WFO-42b-1, which had required that all users of fats and oils in excess of 15,000 pounds per calendar quarter file monthly and quarterly reports covering their consumption of these items.

FISH MEAL AND SCRAP ORDER AMENDED JANUARY 13

Processors of fish meal and fish scrap may add the replacement value of used burlap bags to their maximum bulk prices, the OPA said on January 15. Previously, a processor was penalized when he packed his products in used burlap bags. However, he was not penalized when he used cotton bags since he was permitted to add the cost of any bag other than burlap to his maximum bulk price. The penalty was simply that the cost of his used burlap was usually greater than his permitted mark-up of \$2 a ton on all sales.

OPA explained that the action will permit processors to take advantage of an available supply of used burlap or cotton sacks in packing their products. A recent WPB order (issued November 18, 1944) prohibited fish meal and fish scrap processors from using new burlap or cotton sacks.

The pricing agency also established a dollar-and-cent mark-up of \$7 a ton on sales of fish meal at retail. Previously, retail sales of this meal were controlled under the provisions of the General Maximum Price Regulation. This regulation "froze" a seller's price at the highest price he may have charged during March 1942.

Amdt. 7 to RMFR-73--Fish Meal and Fish Scraps--became effective January 13, 1945. Excerpts follow:

1. Section 1363.12 (a) (3) is hereby deleted.

2. Section 1363.12 (a) (4) is amended to read as follows:

(4) *Maximum prices for sales of fish meal and fish scrap sold in bulk.* To determine the maximum price per ton for fish meal or fish scrap sold in bulk, deduct \$3.00 per ton from the maximum price of fish meal or fish scrap in new burlap bags.

3. Section 1363.12 (a) (5) is amended to read as follows:

(5) *Maximum prices for sales of fish meal and fish scrap in bags or containers other than new burlap bags.* To determine the maximum price for fish meal or fish scrap in bags or containers other than new burlap bags, add the cost of the bags at their replacement value at the time of sale, not exceeding the maximum price thereof, to the maximum price for fish meal or fish scrap when sold in bulk.

4. Section 1363.12 (i) is added to read as follows:

(i) *Maximum prices for sales at retail.* The maximum price for sales of fish meal at retail is the maximum price the retail seller could lawfully have paid to the person from whom he purchased the fish meal delivered to the receiving point of the seller, plus \$7.00 per ton.

WPB PROHIBITS MORE PAPER SACKS FOR FISH MEAL

Use of more paper shipping sacks than were used in 1944 for packaging such animal feeds as fish meal, fish scrap, tankage and meat scrap was prohibited by an amendment to Paper Shipping Sack Order L-279 announced on January 6 by the WPB.

The amendment also prevents use of paper shipping sacks for packaging items by anyone who did not use sacks for this purpose in 1944, officials said. However, persons who formerly used automatic machinery for packaging in paper shipping sacks may continue to do so, in quantities not to exceed that used in 1944.

This amendment does not affect paper shipping sacks used for delivery to the Army, Navy, United States Maritime Commission, or War Shipping Administration. Neither does it apply to empty shipping sacks shipped by the Foreign Economic Administration for the use of the Armed Services.

Foreign Fishery Trade

CANNED TUNA REMOVED FROM IMPORT CONTROL

The WFA took action on January 15 to remove canned tuna and bonito from import control under WFO-63. The action, accomplished by issuance of WFO-63-1, effective January 15, was in line with the general policy of easing or removing restrictions on food commodities whenever the supply, shipping, and strategic considerations permit.

CONTROLS ON EXPORTS TO THE MIDDLE EAST MODIFIED

Current Export Bulletin No. 221, published by the Foreign Economic Administration on January 12, announces that, effective immediately, approval from the Middle East Supply Center in Cairo for the export of many commodities to the Middle East will no longer be required. Bulletin 221 lists commodities for which prior approval from the Center must still be obtained. Included are the following fishery items:

Cod-liver oil, medicinal

Fish, canned and salted

Vitamins

The exporter is cautioned by the FEA that elimination of the approval of the Middle East Supply Center for some commodities does not affect the import license requirements of Middle East countries, and that shipments to those countries which are not covered by import licenses may be confiscated on arrival.

Destinations served by the Middle East Supply Center in Cairo include the following:

Aden and Aden Protectorate (including Kamaran Island, Peria Island, and Sokotra Island)
Anglo-Egyptian Sudan
British Somaliland
Cyprus
Egypt
Eritrea
Ethiopia
French Somaliland

Iran
Iraq
Khorya-Morya Island
Libya (including Cyrenaica and Tripolitania)
Palestine
Saudi Arabia
Syria and Lebanon
Trans-Jordan
Yemen

SHARK FISHING IMPORTANT WAR-TIME INDUSTRY IN AUSTRALIA

Shark fishing has become an important industry in Australia, according to an article in the July 1944 Fisheries Newsletter (published by the Australian Department of War Organization of Industry and the Council for Scientific and Industrial Research). Excerpts from the article follow:

For many years in the past, at some points on the coasts of Victoria and Tasmania, sharks were caught for cray-fish-pot bait, used as manure for orchards, or, to a small extent, for their liver oils, but little, if any, use was made of the flesh for food, apart from the Chinese market for the fins. Sharks, when caught, were usually destroyed, being held to be harmful to more valuable fish; it was believed that the sharks took the other fish off hooks, and preyed upon them when schooled, or pursued them into nets and in this way damaged the netting.

But this is all changed; the shark now takes a very honourable place in our fisheries, and in fact has priority No. 1. In the first place the liver is urgently required for fish-oil production, and the flesh is in demand as food.

Of course, shark flesh has been eaten in Melbourne for a number of years, just as it has been overseas, but the market for it was not strong and there existed very little market in other capital cities for flake, as it is known commercially. The war, however, has for many reasons caused a greatly strengthened demand for Australian fish and the market for shark has increased considerably.

The double demand has therefore caused a considerable expansion of the industry, whose output in Victoria increased from 23,131 lb. in 1930 to 1,691,599 lb. in 1941—there has been a similar order of expansion in Tasmania and South Australia.

The main area in which shark fishing is carried out extends from Lakes Entrance in Victoria to Ceduna in South Australia, and along the north coast of Tasmania. Recently the industry has shown a tendency to spread to other areas, particularly along the coast of New South Wales and the south-east coast of Tasmania.

The vessels used in this fishery range in size from 25-foot boats powered with second-hand car engines, to 50-foot boats powered with modern diesel engines, and most of these are fitted with wells in the same way as crayfish boats. A large number of the best shark fishing vessels was requisitioned by the Services, and it is only quite recently that a few new vessels have been built. The demand for vessels of approximately 45 feet far exceeds the supply, and it will be some time before sufficient replacements can be built.

The sharks are caught on long lines made up with $\frac{3}{4}$ in. and $\frac{1}{2}$ in. sisal rope, and one vessel may set up to 2000 hooks at one time. These hooks are not carried all on a single line, but a number of lines (10-20)

are set on different parts of the ground and marked with buoys and flags. The process of hauling is carried out by means of a power winch, which usually consists of a single wheel, around which a couple of loops of line are made.

The method of handling when the sharks are hauled aboard, varies in different localities, but usually they are thrown into the well and left there until fishing operations are completed and the gear stowed away, when they are butchered and cleaned. The bleeding of the sharks is very important, and if carefully carried out reduces the tendency for ammonia formation in the flesh.

It is at this stage that the novel and important side of shark fishing is introduced: the livers are separated from the other offal and placed in tins in which they can be forwarded to the liver oil processing plants for treatment.

The liver of the school shark is rich in oil, up to about 50 per cent. by weight; this oil is rich in vitamin A. The inability to import cod liver oil from which vitamins A and D for medicinal purposes is obtained, made it necessary for Australia to seek a substitute source of supply. Work carried out for the Council for Scientific and Industrial Research at the University of Melbourne in 1936 to 1938, first showed that such a source existed in the school shark liver. Cod liver oil also contains vitamin D, but since a synthetic form of this vitamin was readily available from overseas, it was possible, by adding it to the shark liver oil containing vitamin A, to prepare an equivalent of cod liver oil. Vitamin A is essential to life and good health: a dietary deficiency of this vitamin in man is first revealed by night blindness; but in addition the vitamin is essential for growth. Vitamin D is essential for the correct assimilation of calcium and phosphorus in the body.

When the supply of cod liver oils was first cut off, the processing of school shark livers was immediately commenced in Australia and fishermen were encouraged to save the livers from the school shark and also to turn their attention to this type of fishing. The industry very quickly developed and more and more livers were sent for processing. Bigger and better boats were equipped and the range of activity was extended up to 80 miles off the Victorian coast. But with the advent of Japan into the war, when it became necessary to direct every suitable small craft in this zone for war purposes, the shark fishing fleet became severely depleted. All the latest and best vessels were early requisitioned for service, and it was necessary to fall back on the smaller boats. These had smaller range and less reliable

engines, and the shark fishermen are to be commended on the way in which they have carried on under difficult conditions.

The livers are frozen or iced at the port and then forwarded with the shark flesh to Melbourne or Adelaide. The shark flesh goes to the market and the livers to the processing plants. The process of extraction of the oil from the livers is carefully controlled and consists mainly of mincing the livers, heating them under steam at a pressure of up to 60 lb., filtering out the coarser liver tissues and centrifuging the oil from the "stick" water. The next step in the process is the purification of the oil and the testing for vitamin content. The liver oil obtained from the school sharks in Bass Strait contains, on the average, 15,000 international units of vitamin A per gramme, compared with the American soupfin shark liver oil with potencies up to 200,000 international units per gramme.

The vitamin content of the livers cannot be determined by size or appearance, although the darker, more mottled livers usually have a higher vitamin content. Several factors determine the vitamin potency of the liver—the locality where the shark has been feeding, the locality where it is caught, and the season when the shark is caught. Also, males have much higher vitamin A potency than female sharks.

At the present time production of shark liver oil is much below our requirements and, moreover, representations are continually being made by Great Britain for supplies. Unless our intake of shark livers can be substantially increased, there is no prospect of supplies becoming available for Great Britain. In fact, the production will need to be increased to meet our own requirements. The greatest handicap to production of shark livers has been the weather. It is impossible for the present fleet to operate unless the weather conditions are most favourable, and the recent experience of the Port Albert shark fishermen is a reminder of the difficulties under which the shark fishermen operate. However, it is considered that a number of fishermen at present concentrating on other species could, under the right conditions, turn their attention to shark fishing to help increase the intake of livers for the production of shark liver oil. Fishermen with suitable boats and gear are asked to do their utmost to assist the shark liver production.

Statistical Summaries

WFA BUYS \$7,451,000 IN FISHERY PRODUCTS IN DECEMBER

Of \$117,976,000 spent by the WFA in December for food and related items, \$7,451,000 was paid for fishery products, according to War Food Administration reports. Canned salmon purchases made up two-thirds of the fishery total, most of the remainder being canned pilchards, mackerel, and sardines.

Purchases of Fishery Products by W.F.A.

Commodity	Unit	December 1944		January 1-December 31, 1944	
		Quantity	F.O.B. Cost Dollars	Quantity	F.O.B. Cost Dollars
FISH					
Herring, canned	Cases	1,521	9,115	77,180	379,927
Mackerel, "	"	98,478	361,979	580,664	3,192,912
Pilchards, "	"	381,729	1,718,749	1,981,265	8,382,113
Salmon, "	"	449,822	5,008,523	3,458,646	34,948,405
Shrimp, "	"	-	-	8,986	102,324
Sardines, "	"	53,851	241,517	1,532,528	6,922,934
Tuna and tuna-like fishes, "	"	-	-	1,358	27,093
Fish, ground, "	"	-	-	102,080	267,191
Squid, "	"	-	-	49,548	189,763
Total	"	985,401	7,339,883	7,792,255	54,412,662
BYPRODUCTS					
Fish, dry-salted	Pounds	-	-	26,491,014	3,998,872
" , pickled	"	339,067	26,278	17,705,693	1,330,293
" , smoked	"	-	-	3,414,258	392,935
" , dehydrated	"	-	-	224,000	268,800
Total	"	339,067	26,278	47,834,965	5,990,900
BYPRODUCTS					
Fish meal	"	-	-	3,600,000	136,097
Oyster shell	"	-	-	80,000	320
Oyster shell flour	"	320,000	1,120	1,380,000	4,830
Oyster shell grits	"	-	-	600,000	2,400
Total	"	320,000	1,120	5,660,000	143,647
VITAMINS					
Vitamin A fish-liver oil	M Units	320,489	83,826	22,542,587	6,356,625
Grand Total		-	7,451,107	-	66,903,834

WHOLESALE AND RETAIL PRICES

Food prices advanced slightly at both wholesale and retail levels from mid-November to mid-December, according to the Bureau of Labor Statistics of the Department of Labor. Fish prices in general, as far as covered by the Bureau, gained also, although retail prices for canned salmon registered declines.

Wholesale and Retail Prices

Item	Unit	Percentage change from--		
Wholesale: (1926 = 100)		Dec. 16, 1944	Nov. 18, 1944	Dec. 18, 1943
All commodities	Index No.	104.4	+0.3	+1.5
Foods	do	105.7	+0.8	0
Fish:		Dec. 1944	Nov. 1944	Dec. 1943
Canned salmon, Seattle:				
Pink, No. 1, tall	\$ per dozen cans	1.970	1/	0
Red, No. 1, tall	do	3.694	1/	0
Cod, cured, large shore, Gloucester, Mass.	\$ per 100 pounds	13.500	0	+4.0
Herring, pickled, N. Y.	\$ per pound	12.00	0	0
Salmon, Alaska, smoked, N. Y.	do	1/	-	-
Retail: (1935-39 = 100)		Dec. 12, 1944	Nov. 14, 1944	Dec. 14, 1943
All foods	Index No.	137.4	+0.7	+0.2
Fish:				
Fresh and canned	do	211.0	+0.3	-6.3
Fresh and frozen	\$ per pound	34.7	+0.4	+0.4
Canned salmon:				
Pink	\$ per pound can	22.5	-1.7	-1.7
Red	do	40.4	-2.7	-2.7

1/ No quotation.

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FISHERY TRADE INDICATORS

(Expressed in Thousands of Pounds)

Item	Month	Latest month	Same month a year ago	Previous month
FRESH FISH LANDINGS				
Boston, Mass.	December	7,240	149	9,578
Gloucester, Mass.	do	7,817	9,210	10,658
Portland, Maine	do	842	628	1,147
Boston, Gloucester, and Portland:				
Cod	do	3,800	884	6,818
Haddock	do	3,210	528	3,063
Pollock	do	3,171	2,316	3,329
Rosefish	do	4,535	4,766	5,418
FISH RECEIPTS, CHICAGO ¹ /				
Salt-water fish	do	2,346	2,465	1,809
Fresh-water fish	do	2,213	3,355	2,765
Shellfish, etc.	do	850	1,205	1,175
By truck	do	823	1,685	1,485
By express	do	1,487	1,900	1,965
By freight	do	3,099	3,439	2,299
COLD-STORAGE HOLDINGS ² /				
New York, N. Y.:				
Salt-water fish	do	10,914	6,964	12,093
Fresh-water fish	do	909	1,820	1,134
Shellfish, etc.	do	2,785	2,533	3,458
Boston, Mass.:				
Salt-water fish	do	11,316	10,149	14,751
Fresh-water fish	do	51	35	54
Shellfish, etc.	do	1,303	1,461	1,415
Chicago, Ill.:				
Salt-water fish	do	2,910	3,179	2,833
Fresh-water fish	do	2,439	3,250	3,221
Shellfish, etc.	do	1,305	1,471	1,341
United States:				
Cod fillets	January 1	5,034	2,214	5,685
Haddock fillets	do	3,028	2,599	3,689
Halibut	do	10,132	6,747	12,922
Mackerel (except Spanish)	do	8,388	5,667	10,372
Croakers	do	1,563	1,440	1,949
Rosefish fillets	do	2,602	2,729	3,128
Salmon	do	10,777	8,803	13,415
Whiting	do	8,797	8,712	10,366
Shrimp	do	10,043	8,418	10,542
New England, all species	do	22,382	18,912	27,421
Middle Atlantic, all species ...	do	25,919	22,320	30,343
South Atlantic, all species	do	7,436	5,690	7,698
North Central East, all species.	do	15,892	18,569	15,726
North Central West, all species.	do	5,560	7,313	5,243
South Central, all species'	do	6,795	4,748	7,266
Pacific, all species	do	26,909	21,802	34,390

¹/ Includes all arrivals as reported by express and rail terminals, and truck receipts as reported by wholesale dealers including smokers.

²/ Data for individual cities are as of the last Thursday of the month, except those for Boston which are for the last Wednesday of the month. Data on United States holdings by various species and by geographical areas are as of the first of the month.

Note:--Data for the latest month are subject to revision.

